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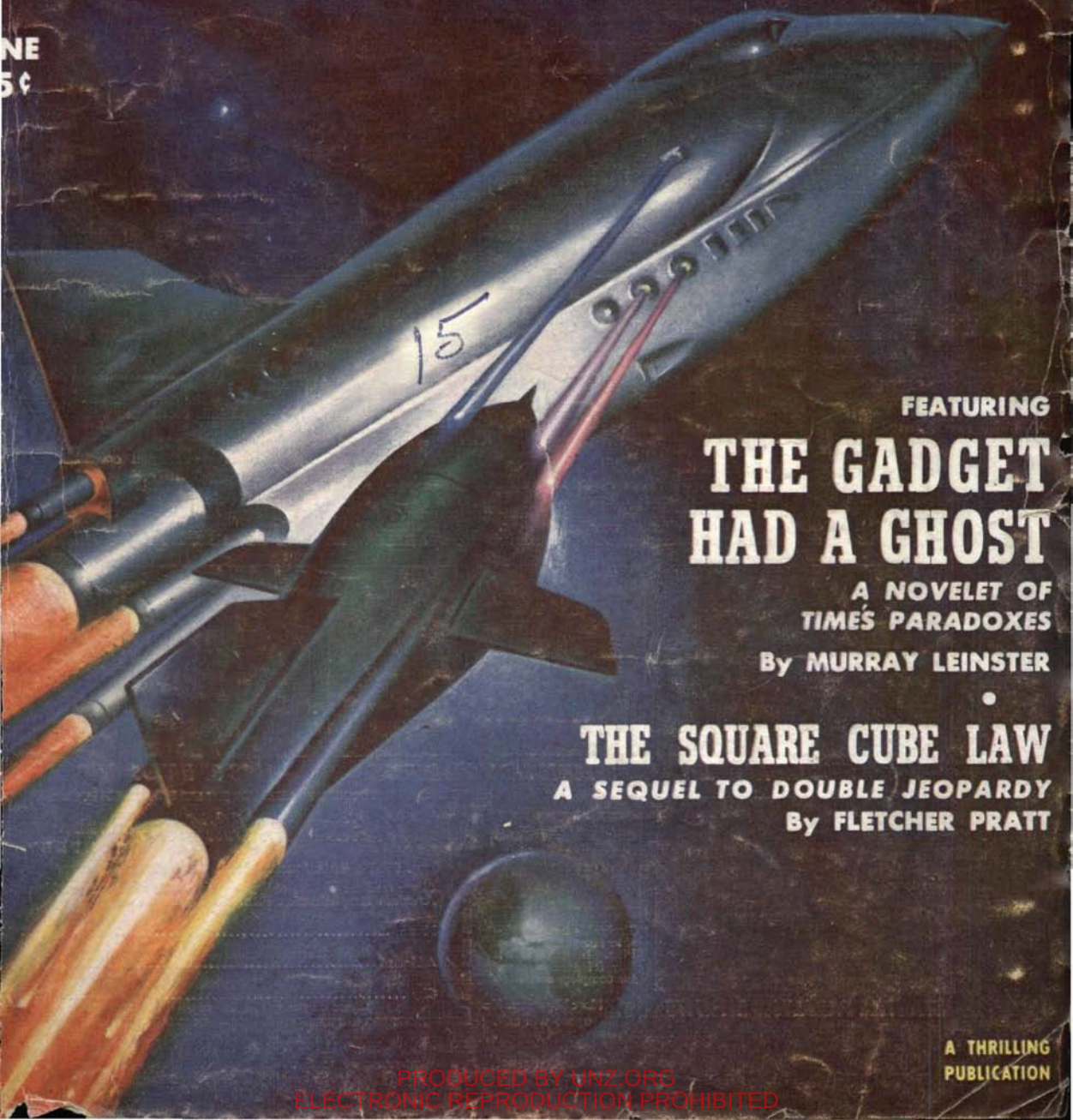

FEATURING

THE GADGET HAD A GHOST

A NOVELET OF TIMES PARADOXES

By MURRAY LEINSTER

•

THE SQUARE CUBE LAW

A SEQUEL TO DOUBLE JEOPARDY

By FLETCHER PRATT

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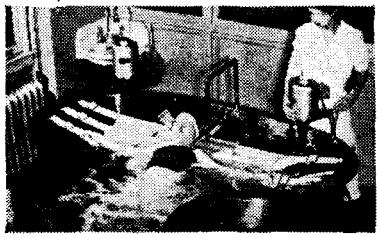

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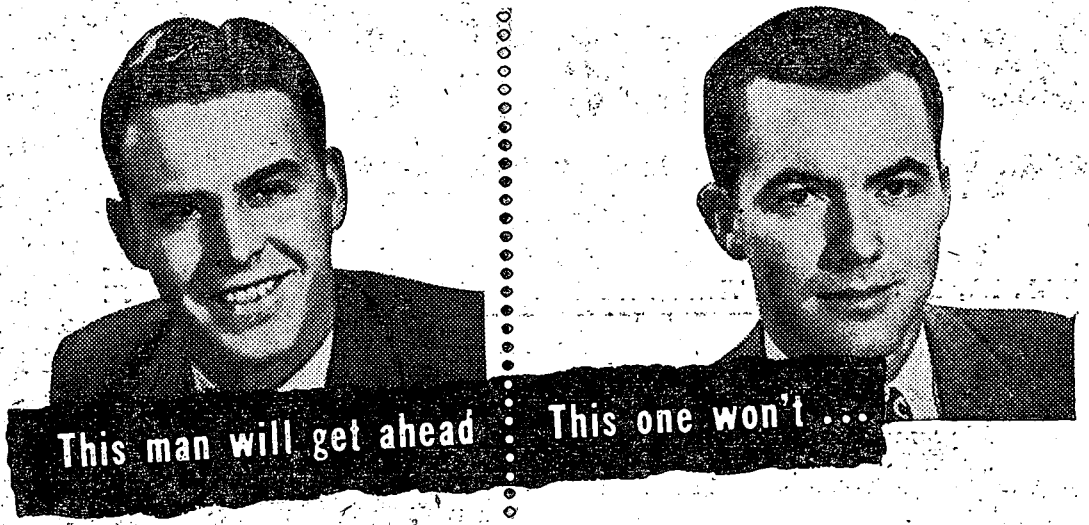

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VOL. XL, NO. 2 A THRILLING PUBLICATION JUNE, 1952

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SAMUEL MINES, *Editor*

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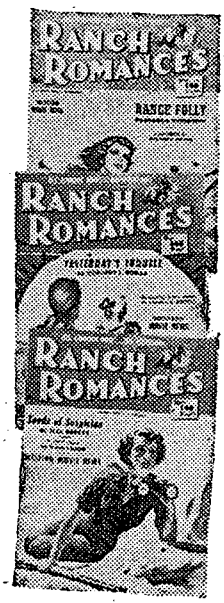

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A DEPARTMENT FOR SCIENCE FICTION FANS

AMERICAN scientists are displaying unacademic alarm at a progressive deterioration of personal liberties throughout the world.

The fact that scientists, who have often refused to meddle in things political, have come down from their ivory towers, is an indication of the way the wind is shifting. Personal liberties are the business of all of us. Tragic history has shown us that no one can afford to remain aloof; that freedom involves the right of the scientist to pursue his investigations freely just as much as that of the writer or artist to express his beliefs. It involves the right of a publisher to print an honest magazine, it opposes the setting of any horizons upon an author's imagination or even of readers to write and say what they please in a letter column like ours.

Personal and intellectual freedom, the right to say what you think, is in danger, not alone in the Iron Curtain countries, many scientists feel, but in the democracies of the world as well. It is perhaps another graphic illustration of the truism that war pays nobody, that seven years after the second war to save democracy, we head back into a period of ill will and growing restrictions painfully similar to that of 1939. At the last meeting of the American Association for the Advancement of Science in Philadelphia, there was considerably more viewing with alarm than pointing with pride.

The Status Quo

Both the Iron Curtain countries and the western world block any honest evaluation of their cultures, according to Dr. Russel L. Ackoff, of the Case Institute of Technology. Social scientists particularly are forced into the conservative role of supporting the status quo. Their energies are spent in propaganda to this end instead of in testing new and improved social techniques.

In Soviet countries, of course, the suppressions are more flagrant and violent, since scientific theory must agree with Marx and Engels, which makes them easier to spot.

For example: a Russian unfortunate enough to come down with pneumonia gets no penicillin or aureomycin, because someone has decided these drugs are somehow un-Marxian. Instead he gets a shot of novocaine, the dentist's friend, on the theory that it works on the central nervous system and therefore influences the entire body.

Russian scientists, as in the Lysenko incident, have "discovered" scientific dogmas abandoned by the rest of the world for a hundred years. These theories receive official blessing in spite of their present scientific absurdity because they coincide with the current political line. And when it comes to interplanetary theorizing, the wedding of Soviet science and politics rises to frenzied heights.

Life on Mars

Russian astronomers have decided there is life on Mars and that the climate of Mars is similar to that of Siberia. Vegetable life on Mars therefore resembles Siberian flora. Alert Russian scientists are studying plant life in Siberia intensively in preparation for that first landing on Mars.

In the field of mental science the Russians stopped with Pavlov. This leaves them fifty years behind the rest of the world, which guarantees Dark Age diagnosis, or that Russians with neurotic difficulties will be treated by dialectic materialism rather than psychiatry—or even dianetics.

The entire retrograde tendency of Russian science is illustrated by the fact that present Soviet heroes of science are Lysenko and Michurin, and neither of these men, nor of the schools

(Continued on page 131)

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THAT HAS
ENDURED WITH THE
PYRAMIDS

A SECRET METHOD FOR THE MASTERY OF LIFE

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Today it is known that they discovered and learned to interpret certain *Secret Methods* for the development of their inner power of mind. They learned to command the inner forces within their own beings, and to master life. This secret art of living has been preserved and handed down throughout the ages. Today it is extended to those who dare to use its profound principles to meet and solve the problems of life in these complex times.

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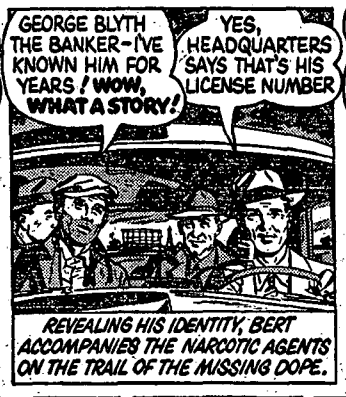
REPORTER'S HUNCH PAYS OFF TWO WAYS...

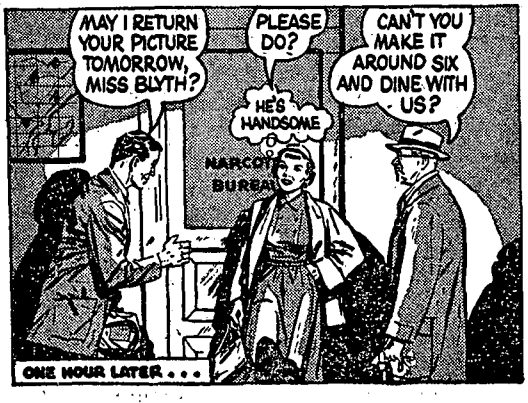
MASQUERADING AS A "SKID ROW" CHARACTER TO GATHER FEATURE MATERIAL FOR HIS NEWSPAPER, BERT EVENS, FAMOUS REPORTER, WITNESSES A PECULIAR HAPPENING...

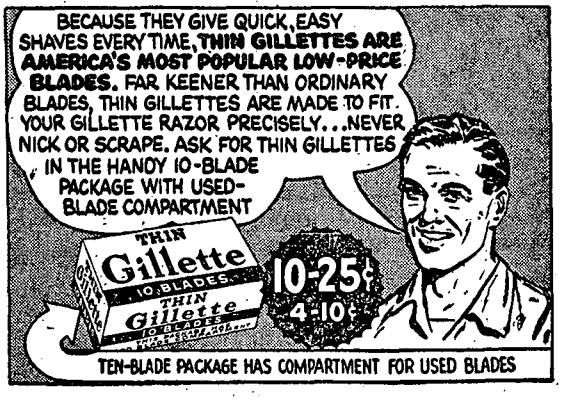
THOUGHT YOU GAVE US THE SLIP-EH? HAND OVER THE DOPE!
I'VE QUIT PEDDLING IT
HE SLIPPED SOMETHING INTO A GIRL'S SEDAN...LICENSE NUMBER 062-451



REVEALING HIS IDENTITY, BERT ACCOMPANIES THE NARCOTIC AGENTS ON THE TRAIL OF THE MISSING DOPE.

MY PAPER WANTS MISS BLYTH'S PICTURE. MAY I DROP IT OFF AND SEE YOU AT HEADQUARTERS?
OKAY, BUT HURRY. WE NEED YOUR STATEMENT TO CLEAR MISS BLYTH


MAY I RETURN YOUR PICTURE TOMORROW, MISS BLYTH?
PLEASE DO?
HE'S HANDSOME
NARCOTIC BUREAU
CAN'T YOU MAKE IT AROUND SIX AND DINE WITH US?
ONE HOUR LATER...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What's New in Science?

RAINMAKING TAKES another elbowing from the New Mexico Institute of Mining and Technology. According to Dr. E. J. Workman, president of that institution, seeding baby thunder clouds with silver iodide may result in less rain falling over a given area than would have been the case if things had been left alone. Knocking off small clouds could have the effect of dispersing electrical energy building up in the area which would have resulted eventually in a real thunder and rainstorm. So celebrated a scientist as Dr. Irving Langmuir believes that the attempts to make rainfall with silver iodide in New Mexico has affected normal weather cycles not only locally, but all over the country. The optimism of four years ago has largely disappeared.

IF YOUR CHILDREN are behaving like little BEMS, lend an ear to the National Education Association before you pick up that baseball bat. This is an anxious age, points out the NEA, and children growing up today exhibit severe signs of anxiety and tension. They absorb it from the atmosphere which surrounds them. Their parents are anxious, their teachers are disturbed—and unconsciously adults project their fears and tensions to their children. It is a characteristic of the little br—darlings, that the more disturbed they are the bi— the more berserk they become. So treat them gently. If you can.

THERE ARE 31 MOONS in our solar system, divided not equally among the planets. Earth has only one. Jupiter hits the jackpot with twelve, Saturn has nine, Uranus five, Mars two, Neptune two. Mars' two moons set a dizzying pace; one travels around Mars at a distance of 15,000 miles, so slowly that it takes two days to rise and set. The nearer moon, only 4000 miles away, zips around its planet several times during a single day. No moons have been found for Mercury, Venus or Pluto, though it is not unlikely that continued searching of the sky may yet turn up a few satellites so faint as to have been missed.

THE ORIGIN OF COSMIC RAYS, long a guessing game in astronomy, has now been credited to the Crab nebula, a supernova well known to the brethren of the telescope. This theory was advanced by a group of Japanese astronomers who, before Pearl Harbor, had undertaken intensive study of cosmic rays. They carried detection instruments into the Shimizu tunnel which was deep underground and so heavily shielded that only the most intense cosmic rays could penetrate, and could not be scattered by the earth's magnetic field. Directional apparatus pointed toward the Crab nebula, which known since 1730, is a fertile source of all kinds of noise and static easily picked up on receivers.

PARALYTIC STROKES have been relieved by the use of Benadryl, of the earliest antihistamines. In some types of paralysis pain is severe when the patient is touched or moved and none of the usual drugs like aspirin, codeine or morphine have given much help. Benadryl relieves the pain and assists markedly in the rehabilitation of the patient, such as submitting to massage, learning to walk again and so on.

YOUR CHILD'S DOG has been cleared of any complicity in the spread of polio. Once under suspicion, dogs, cats or other fur-bearers have been given a clean bill by the National Foundation for Infantile Paralysis. Animals do contract similar diseases: dogs have running fits which leaves them paralyzed, chickens get two types of paralyzing illness and other animals may have allied diseases. But none of these seem to be polio and animals do not contract it from man. Even flies, sternly suspected of being carriers, have been at least partially cleared. Outbreaks of polio have occurred in the Arctic, among Eskimos, where flies cannot live. Direct person-to-person contact was responsible.

THIS IS LEAP YEAR, but eligible bachelors need not take to the woods, nor fear any approaching Sadie Hawkins day. The Metropolitan Life Insurance Company reports that the marriage rate does not rise appreciably on a leap year. 1952, in fact, looks particularly bad because the war marriage boom has already accounted for so many unmarried people that the supply is below normal.

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The GADGET

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If you were thirty-five and found a note you wrote to yourself seven hundred years ago . . . would you heed your own advice?

I

THIS WAS Istanbul, and the sounds of the city—motor-cars and clumping donkeys, the nasal cries of peddlers and the distant roar of a jet-plane somewhere over the city—came muted through the windows of Coghlan's flat. It was already late dusk, and Coghlan had just gotten back from the American College, where he taught physics. He relaxed in his chair and waited. He was to meet Laurie later, at the Hotel Petra on the improbably-named Grande Rue de Petra, and hadn't too much time to spare; but he was intrigued by the unexpected guests he had found waiting for him when he arrived. Duval, the Frenchman, haggard and frantic with impatience; Lieutenant Ghalil, calm and patient and impressive in the uniform of the Istanbul Police Department. Ghalil had introduced himself with perfect courtesy and explained that he had come with M. Duval to ask for information which only Mr. Coghlan, of the American College, could possibly give.

They were now in Coghlan's sitting-room. They held the iced drinks which were formal hospitality. Coghlan waited.

"I am afraid," said Lieutenant Ghalil,

HAD A GHOST

A Novelet by MURRAY LEINSTER

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wryly, "that you will think us mad, Mr. Coghlan."

Duval drained his glass and said bitterly, "Surely I am mad! It cannot be otherwise!"

Coghlan raised sandy eyebrows at them. The Turkish lieutenant of police shrugged. "I think that what we wish to ask, Mr. Coghlan, is: Have you, by any chance, been visiting the thirteenth century?"

Coghlan smiled politely. Duval made an impatient gesture. "Pardon, M. Coghlan! I apologize for our seeming insanity. But that is truly a serious question!"

This time Coghlan grinned. "Then the answer's 'No.' Not lately. You evidently are aware that I teach physics at the College. My course turns out graduates who can make electrons jump through hoops, you might say, and the better students can snoop into the private lives of neutrons. But fourth-dimension stuff —you refer to time-travel I believe—is out of my line."

Lieutenant Ghalil sighed. He began to unwrap the bulky parcel that sat on his lap. A book appeared. It was large, more than four inches thick, and its pages were sheepskin. Its cover was heavy, ancient leather—so old that it was friable—and inset in it were deeply-carved ivory medallions. Coghlan recognized the style. They were Byzantine ivory-carvings, somewhat battered, done in the manner of the days before Byzantium became successively Constantinople and Stamboul and Istanbul.

"An early copy," observed Ghalil, "of a book called the *Alexiad*, by the Princess Anna Commena, from the thirteenth century I mentioned. Will you be so good as to look, Mr. Coghlan?"

He opened the volume very carefully and handed it to Coghlan. The thick, yellowed pages were covered with those graceless Greek characters which—without capitals or divisions between words or any punctuation or paragraphing—were the text of books when they had just ceased to be written on long strips and rolled up on sticks. Coghlan regarded it curiously.

"Do you by any chance read Byzantine Greek?" asked the Turk hopefully.

Coghlan shook his head. The police lieutenant looked depressed. He began to turn pages, while Coghlan held the book. The very first page stood up stiffly. There was brown, crackled adhesive around its edge, evidence that at some time it had been glued to the cover and lately had been freed. The top half of the formerly hidden sheet was now covered by a blank letterhead of the Istanbul Police Department, clipped in place by modern metal paper-clips. On the uncovered part of the page, the bottom half, there were five brownish smudges that somehow looked familiar. Four in a row, and a larger one beneath them. Lieutenant Ghalil offered a pocket magnifying-glass.

"Will you examine?" he asked.

Coghlan looked. After a moment he raised his head.

"They're fingerprints," he agreed. "What of it?"

Duval stood up and abruptly began to pace up and down the room, as if filled with frantic impatience. Lieutenant Ghalil drew a deep breath.

"I am about to say the absurd," he said ruefully. "M. Duval came upon this book in the Bibliotheque National in Paris. It has been owned by the library for more than a hundred years. Before, it was owned by the Comptes de Huisse, who in the sixteenth century were the patrons of a man known as Nostradamus. But the book itself is of the thirteenth century, written and bound in Byzantium. In the Bibliotheque National, M. Duval observed that a leaf was glued tightly. He loosened it. He found those fingerprints and—other writing."

Coghlan said, "Most interesting," thinking that he should be leaving for his dinner engagement with Laurie and her father.

"Of course," said the police officer, "M. Duval suspected a hoax. He had the ink examined chemically, then spectro-

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scopically. But there could be no doubt. The fingerprints were placed there when the book was new. I repeat, there can be no doubt!"

Coghlan had no inkling of what was to come. He said, puzzledly:

"Fingerprinting is pretty modern stuff. So I suppose it's remarkable to find prints so old. But—"

Duval, pacing up and down the room, uttered a stifled exclamation. He stopped by Coghlan's desk. He played feverishly with a wooden-handled Kurdish dagger that Coghlan used as a letter-opener, his eyes a little wild.

Lieutenant Ghalil said resignedly:

Coghlan let him roll the tips of his fingers on the glossy top sheet of the pad. It was a familiar enough process. Coghlan had had his fingerprints taken when he got his passport for Turkey, and again when he registered as a resident-alien with the Istanbul Police Department. The Turk offered the magnifying glass again. Coghlan studied the thumbprint he had just made. After a moment's hesitation, he compared it with the thumbprint on the sheepskin. He jumped visibly. He checked the other prints, one by one, with increasing care and incredulity.

Presently he said in the tone of one

Gadget Man

MURRAY LEINSTER is a Virginian with the soul of a Yankee tinkerer. No mean technician, he is always snatching moments from writing to work on a new gadget which may yet turn out to be an invention. If you know his work you know his stories rate high in mechanical intelligence and insight and frequently resemble a Cook's Tour through Gadgetry, to the delight of a huge and appreciatively loyal group of followers. Perhaps the ultimate in gadget stories was his Bud Gregory series in this magazine, which has been snapped up for CBS' television show, OUT THERE.

THE GADGET HAD A GHOST is a little different. No one invents a gadget here. There's just the little problem of how to deal with an old gadget that shouldn't have been where it was—or with its ghost.

—The Editor

"The fingerprints are not remarkable, Mr. Coghlan. They are impossible. I assure you that, considering their age alone, they are quite impossible! And that is so small, so trivial an impossibility compared to the rest! You see, Mr. Coghlan, those fingerprints are yours!"

WHILE Coghlan sat, staring rather intently at nothing at all, the Turkish lieutenant of police brought out a small fingerprint pad, the kind used in up-to-date police departments. No need for ink. One presses one's fingers on the pad and the prints develop of themselves.

"If I may show you—"

who does not believe his own words: "They—they do seem to be alike! Except for—"

"Yes," said Lieutenant Ghalil. "The thumbprint on the sheepskin shows a scar that your thumb does not now have. But still it is your fingerprint—that and all the others. It is both philosophically and mathematically impossible for two sets of fingerprints to match unless they come from the same hand!"

"These do," observed Coghlan.

Duval muttered unhappily to himself. He put down the Kurdish knife and paced again. Ghalil shrugged.

"M. Duval observed the prints," he explained, "quite three months ago—

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the prints and the writing. It took him some time to be convinced that the matter was not a hoax. He wrote to the Istanbul Police to ask if their records showed a Thomas Coghlan residing at 750 Fatima. Two months ago!"

Coghlan jumped again. "Where'd he get that address?"

"You will see," said the Turk. "I repeat that this was two months ago! I replied that you were registered, but not at that address. He wrote again, forwarding a photograph of part of that sheepskin page and asking agitatedly if those were your fingerprints. I replied that they were, save for the scar on the thumb. And I added, with lively curiosity, that two days previously you had removed to 750 Fatima—the address M. Duval mentioned a month previously."

"Unfortunately," said Coghlan, "that just couldn't happen. I didn't know the address myself, until a week before I moved."

"I am aware that it could not happen," said Ghalil painedly. "My point is that it did."

"You're saying," objected Coghlan, "that somebody had information three weeks before it existed!"

Ghalil made a wry face. "That is a masterpiece of understatement—"

"It is madness!" said Duval hoarsely. "It is lunacy! *Ce n'est pas logique!* Be so kind, M. Coghlan, as to regard the rest of the page!"

Coghlan pulled off the clips that held the police-department letterhead over the top of the parchment page, and immediately wondered if his hair was really standing on end. There was writing there. He saw words in faded, unbelievably ancient ink. It was modern English script. The handwriting was as familiar to Coghlan as his own—

Which it was. It said:

See Thomas Coghlan, 750 Fatima, Istanbul.
Professor, President, so what?
Gadget at 80 Hosain, second floor, back room.
Make sure of Mannard. To be killed.

Underneath, his fingerprints remained visible.

COGHLAN stared at the sheet. He found his glass and gulped at it. On more mature consideration, he drained it. The situation seemed to call for something of the sort.

There was silence in the room, save for the drowsy sounds of the night outside. They were not all drowsy, at that. There were voices, and somewhere a radio emitted that nasal masculine howling which to the Turkish ear is music. Uninhibited taxicabs, an unidentifiable jingling, an intonation of speech, all made the sound that of Istanbul and no other place on earth. Moreover, they were the sounds of Istanbul at nightfall.

Duval was still. Ghalil looked at Coghlan and was silent. And Coghlan stared at the sheet of ancient parchment.

He faced the completely inexplicable, and he had to accept it. His name and present address—no puzzle, if Ghalil simply lied. The line about Laurie's father, Mannard, implied that he was in danger of some sort; but it didn't mean much because of its vagueness. The line referring to another address, 80 Hosain, and a "gadget" was wholly without any meaning at all. But the line about "professor, president"—that hit hard.

It was what Coghlan told himself whenever he thought of Laurie. He was a mere instructor in physics. As such, it would not be a good idea for him to ask Laurie to marry him. In time he might become a professor. Even then it would not be a good idea to ask the daughter of an umpty-millionaire to marry him. In more time, with the breaks, he might become a college president—the odds were astronomically against it, but it could happen. Then what? He'd last in that high estate until a college board of trustees decided that somebody else might be better at begging for money. All in all, then, too darned few prospects to justify his ever asking Laurie to marry him—only an instructor, with a professorship the likely peak of his career, and a presidency of a college something al-

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most unimaginable. So, when Coghlan thought of Laurie, he said sourly to himself, "Professor, president, so what?" And was reminded not to yield to any inclination to be romantic.

But he had not said that four-word phrase to anybody on earth. He was the only human being to whom it would mean anything at all. It was absolute proof that he, Thomas Coghlan, had written those words. But he hadn't.

He swallowed.

"That's my handwriting," he said carefully, "and I have to suppose that I wrote it. But I have no memory of doing so. I'll be much obliged if you'll tell me what this is all about."

Duval burst into frantic speech.

"That is what I have come to demand of you, M. Coghlan! I have been a sane man! I have been a student of the Byzantine empire and its history! I am an authority upon it! But this—modern English, written when there was no modern English? Arabic numerals, when Arabic numerals of that form were unknown? House-numbers when they did not exist, and the city of Istanbul when there was no city of that name on earth? I could not rest! M. Coghlan, I demand of you—what is the meaning of this?"

Coghlan looked again at the faded brown writing on the parchment. Duval abruptly collapsed, buried his face in his hands. Ghalil carefully crushed out his cigarette. He waited.

Coghlan stood up with a certain deliberation.

"I think we can do with another drink."

HE GATHERED up the glasses and left the room, but he did not find that his mind grew any clearer. He found himself wishing that Duval and Ghalil had never been born, to bring a puzzle like this into his life. He hadn't written that message—but nobody else could have. And it was written.

It suddenly occurred to him that he had no idea what the message referred to, or what he should do about it.

He went back into the living-room with the refilled glasses. Duval still sat with his head in his hands. Ghalil had another cigarette going, was regarding its ash with an expression of acute discomfort. Coghlan put down the drinks.

"I don't see how anyone else could have written that message," he observed, "but I don't remember writing it myself, and I've no idea what it means. Since you brought it, you must have some idea."

"No," said Ghalil. "My first question was the only sane one I can ask. Have you been traveling in the thirteenth century? I gather that you have not. I even feel that you have no plans of the sort."

"At least no plans," agreed Coghlan, with irony. "I know of nowhere I am less likely to visit."

Ghalil waved his cigarette, and the ash fell off.

"As a police officer, there is a mention of someone to be killed; possibly murdered. That makes it my affair. As a student of philosophy it is surely my affair! In both police work and in philosophy it is sometimes necessary to assume the absurd, in order to reason toward the sensible. I would like to do so now."

"By all means!" said Coghlan dryly.

"At the moment, then," said Ghalil, with a second wave of his cigarette, "you have as yet no anticipation of any attempt to murder Mr. Mannard. You have no scar upon your thumb, nor any expectation of one. And the existence of—let us say—a 'gadget' at 80 Hosain is not in your memory. Right?"

"Quite right," admitted Coghlan.

"Now if you are to acquire the scar," observed Ghalil, "you will make—or have made, I must add—those fingerprints at some time in the future, when you will know of danger to Mr. Mannard, and of a gadget at 80 Hosain. This—"

"Ce n'est pas logique!" protested Duval bitterly.

"But it is logic," said Ghalil calmly. "The only flaw is that it is not common

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sense. Logically, then, one concludes that at some time in the future, Mr. Coghlan will know these things and will wish to inform himself, in what is now the present, of them. He will wish —perhaps next week—to inform himself today that there is danger to Mr. Mannard and that there is something of significance at 80 Hosain, on the second floor in the back room. So he will do so. And this memorandum on the fly-leaf of this very ancient book will be the method by which he informs himself."

Coghlan said, "But you don't believe that!"

"I do not admit that I believe it," said Ghalil with a smile. "But I think it would be wise to visit 80 Hosain. I cannot think of anything else to do!"

"Why not tell Mannard about all this?" asked Coghlan dryly.

"He would think me insane," said the Turk, just as dryly. "And with reason. In fact, I suspect it myself."

"I'll tell him," said Goghlan, "for what it's worth. I'm having dinner with him and with his daughter tonight. It will make small talk at least." He looked at his watch. "I really should be leaving now."

LIEUTENANT GHALIL rose politely. Duval took his head from his hands and stood up also, looking more haggard now than at the beginning of the talk. Something occurred to Coghlan.

"Tell me," he said curiously, "M. Duval, when you first found this book, what made you loosen a glued-down page?"

Duval spread out his hands. Ghalil turned back the cover again, and put the fly-leaf flat. On what had been the visible side there was a note, a gloss, of five or six lines. It was in an informal sort of Greek lettering, and unintelligible to Coghlan. But, judging by its placement, it was a memo by some previous owner of the book, rather than any contribution of the copyist.

"My translator and M. Duval agree," observed Ghalil. "They say it says, 'This book has traveled to the frigid Beyond and returned, bearing writing of the adepts who ask news of Appolonius.' I do not know what that means, nor did M. Duval, but he searched for other writings. When he saw a page glued down, he loosened it—and you know what has resulted."

Coghlan said vexedly, "I wouldn't know what an adept is, and I can hardly guess what a frigid beyond is, or a warm one either. But I do know an Appolonius. I think he's a Greek, but he calls himself a Neoplatonist as if that were a nationality, and says he hails from somewhere in Arabia. He's trying to get Mannard to finance some sort of political shenanigan. But he wouldn't be referred to. Not seven centuries ago!"

"You were," said Ghalil. "And Mr. Mannard. And 80 Hosain. I think M. Duval and myself will investigate that address and see if it solves the mystery or deepens it."

Duval suddenly shook his head.

"No," he said with a sort of pathetic violence. "This affair is not possible! To think of it invites madness! Mr. Coghlan, let us thrust all this from our minds! Let us abondon it! I ask your pardon for my intrusion. I had hoped to find an explanation which could be believed. I abandon the hope and the attempt. I shall go back to Paris and deny to myself that any of this has ever taken place!"

Coghlan did not believe him, said nothing.

"I hope," said Ghalil mildly, "that you may reconsider." He moved toward the door with the Frenchman in tow. "To abandon all inquiry at this stage would be suicidal!"

Coghlan said:

"Suicidal?"

"For one," admitted Ghalil, ruefully, "I should die of curiosity!"

He waved his hand and went out, pushing Duval. And Coghlan began to

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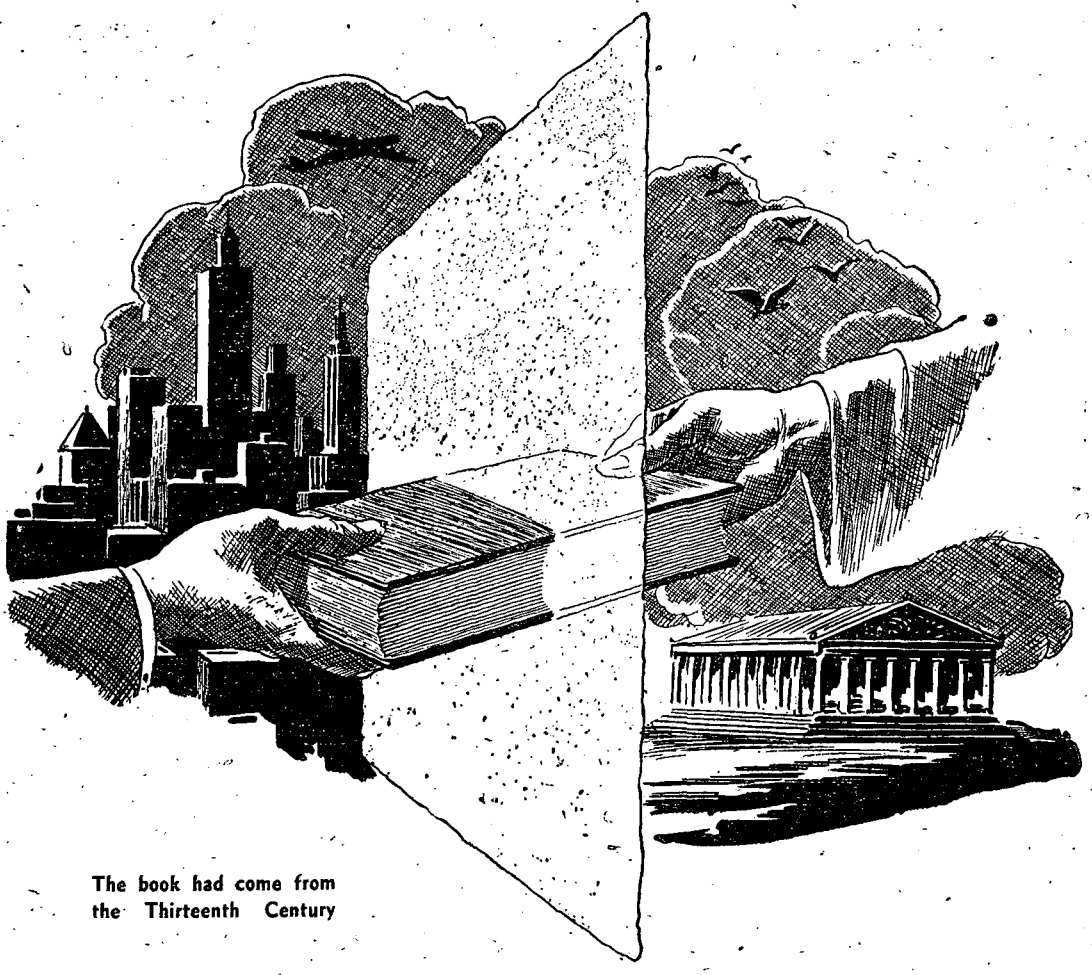

The book had come from the Thirteenth Century

dress for his dinner with Laurie and her father at the Hotel Petra. But as he dressed, his forehead continually creased into a scowl of somehow angry puzzlement.

II

ALL the taxicabs of Istanbul are driven by escaped maniacs whom the Turkish police inexplicably leave at large. The cab in which Coghlan drove toward the Hotel Petra was driven by a man with very dark skin and very white teeth and a conviction that the fate of every Pedestrian was determined by Allah and he did not have to worry about them. His cab was equipped with an unusually full-throated horn, and fortunately he seemed to love the sound of it. So Coghlan rode madly through narrow streets in which foot-passengers seemed constantly to be recoiling in horror from the cab-horn, and thereby escaping annihilation by the cab.

The cab passed howling through preposterously narrow lanes. It turned corners on two wheels with less than inches to spare. It rushed roaring upon knots of people who dissolved with incredible agility before its approach, and it plunged into alleys like tunnels, and it emerged into the wider streets of the more modern part of town with pungent Turkish curses hanging upon it like garlands.

Coghlan did not notice. Once he was

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alone, suspicions sprang up luxuriantly. But he could no more justify them than he could accept the situation his visitors had presented. The two had not asked for money or hinted at it. Coghlan didn't have any money, anyhow, for them to be scheming to get. The only man a swindling scheme could be aimed at was Mannard. Mannard had money. He'd made a fortune building dams, docks, railroads and power installations in remote parts of the world. But he was hardly a likely mark for a profitable hoax, even if his name was mentioned in that memorandum so impossibly in Coghlan's handwriting. He was one of the major benefactors of the college in which Coghlan taught. He had at least one other major philanthropy in view right now. He'd be amused. But there was Laurie, of course. She was a point where he could be vulnerable, be hit hard.

Decidedly Mannard had to be told about it.

The cab rushed hooting down the wide expanse of the Grande Rue de Petra. It made a U-turn. It eeled its way between a sedate limousine and a ferocious Turkish Army jeep, swerved precariously around a family group frozen in mid-pavement, barely grazed a parked convertible, and came to a squealing stop precisely before the canopy of the Hotel Petra. Its chauffeur beamed at Coghlan and happily demanded six times the legal fare for the journey.

Coghlan beckoned to the hotel *Commissionaire*. He put twice the legal fare in the man's hand, said, "Pay him and keep the change," and went into the hotel. His action was a form of American efficiency. It saved money and argument. The discussion was already reaching the shouting stage as he entered the hotel's large and impressive lobby.

Laurie and her father were waiting for him. Laurie was a good deal better-looking than he tried to believe, so he muttered, "Professor, president, so what?" as he shook hands. It was very difficult to avoid being in love with Laurie, but he worked at it.

"I'm late," he told them. "Two of the weirdest characters you ever saw turned up with absolutely the weirdest story you ever heard. I had to listen to it. It had me flipped."

A gleaming white shirt-front moved into view. A beaming smile caressed him. The short broad person who called himself Appolonius the Great—he came almost up to Coghlan's shoulder and outweighed him by forty pounds—cordially extended a short and pudgy arm and a round fat hand. Coghlan noticed that Appolonius' expensive wrist-watch noticeably made a dent in the fatness of his wrist.

"Surely," said Appolonius reproachfully, "you found no one stranger than myself!"

COGHLAN shook hands as briefly as possible. Appolonius the Great was an illusionist—a theatrical magician—who was taking leave from a season he described as remarkable in the European capitals west of the Iron Curtain. His specialty, Coghlan understood, was sawing a woman in half before his various audiences, and then producing her unharmed afterward. He said proudly that when he had bisected the woman, the two halves of her body were carried off at opposite sides of the stage. This, he allowed it to be understood, was something nobody else could do with any hope of reintegrating her afterward.

"You know Appolonius," grunted Mannard. "Let's go to dinner."

He led the way toward the dining-room. Laurie took Coghlan's arm. She looked up at him and smiled.

"I was afraid you'd turned against me, Tommy," she said. "I was practising a look of pretty despair to use if you didn't turn up."

Coghlan looked down at her and hardened his heart. On two previous occasions he'd resolutely broken appoint-

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ments when he'd have seen Laurie, because he liked her too much and didn't want her to find it out. But he was afraid she'd guessed it anyway.

"Good thing I had this date," he told her. "My visitors had me dizzy. Come to think of it, I'm going to ask Appolonius how they did their stunt. It's in his line, more or less."

The head-waiter bowed the party to a table. There were only the four of them at dinner, and there was the gleam of silver and glass and the sound of voices, with a string orchestra valiantly trying to make a strictly Near-Eastern version of the *Rhapsody in Blue* sound like American swing. They didn't make it, but at least it wasn't loud.

Coghlan waited for the hors d'oeuvres, his face unconsciously growing gloomy. Appolonius the Great was lifting his wine-glass. The deeply-indented wrist-watch annoyed Coghlan. Its sweep-second-hand irritated him unreasonably. Appolonius was saying blandly:

"I think it is time for me to reveal my great good fortune! I offer a toast to the Neoplatonist Autonomous Republic-to-be! Some think it a lie, and some a swindle and me the would-be swindler. But drink to its reality!"

He drank. Then he beamed more widely still.

"I have secured financing for the bribes I need to pay," he explained. All his chins radiated cheer. "I may not reveal who has decided to enrich some scoundrelly politicians in order to aid my people, but I am very happy. For myself *and* my people!"

"That's fine!" said Mannard.

"I shall no longer annoy you for a contribution," Appolonius assured him. "Is it not a relief?"

Mannard chuckled. Appolonius the Great was almost openly a fake; certainly he told about his "people" with the air of one who does not expect anybody to take him seriously. The story was that somewhere in Arabia there was a group of small, obscure villages in which the doctrines of Neoplatonism survived as a religion. They were maintained by a caste of philosopher-priests who kept the population bemused by magic, and Appolonius claimed to have been one of the hierarchy and to be astonishing all Europe with the trickery which was the mainstay of a cult. It sounded like the sort of publicity an over-imaginative press-agent might have contrived. A tradition of centuries of the development and worship of the art of hocus-pocus was not too credible. And now, it seemed, Appolonius was claiming that somebody had put up money to bribe some Arab government and secure safety for the villagers in revealing their existence and at-least-eccentric religion.

"I'd some visitors today," said Coghlan, "who may have been using some of your Neoplatonistic magic." He turned to Mannard. "By the way, sir, they told me that I am probably going to murder you."

Mannard looked up amusedly. He was a big man, deeply tanned, and looked capable of looking after himself. He said:

"Knife, bullet, or poison, Tommy? Or will you use a cyclotron? How was that?"

COGHLAN explained. The story of his interview with the harassed Duval and the skeptical Ghalil sounded even more absurd than before, as he told it.

Mannard listened. The hors d'oeuvres came. The soup. Coghlan told the story very carefully, and was the more annoyed as he found himself trying to explain how impossible it was that it could be a fake. Yet he didn't mention that one line which had most disturbed him.

Mannard chuckled once or twice as Coghlan's story unfolded.

"Clever!" he said when Coghlan finished. "How do you suppose they did it, and what do they want?"

Appolonius the Great wiped his mouth and topmost chin.

"I do not like it," he said seriously. "I do not like it at all. Oh, the book and

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the fingerprints and the writing . . . one can do such things. I remember that once, in Madrid, I—but no matter! They are amateurs, and therefore they may be dangerous folk."

Laurie said, "I think Tommy'd have seen through anything crude. And I don't think he told quite all the story. I've known him a long time. There's something that still bothers him."

Coghlan flushed. Laurie could read his mind uncannily.

"There was," he admitted, "a line that I didn't tell. It mentioned something that would mean nothing to anyone but myself—and I've never mentioned it to anyone."

Appolonius sighed. "Ah, how often have I not read someone's inmost thoughts! Everyone believes his own thoughts quite unique! But still, I do not like this!"

Laurie leaned close to Coghlan. She said, under her breath, "Was the thing you didn't tell—about me?"

Coghlan looked at her uncomfortably, and nodded.

"Nice!" said Laurie, and smiled mischievously at him.

Appolonius suddenly made a gesture. He lifted a goblet with water in it. He held it up at the level of their eyes.

"I show you the principle of magic," he said firmly. "Here is a glass, containing water only. You see it contains nothing else!"

Mannard looked at it warily. The water was perfectly clear. Appolonius swept it around the table at eye-level.

"You see! Now, Mr. Coghlan, enclose the goblet with your hands. Surround the bowl. You, at least, are not a confederate! Now . . ."

The fat little man looked tensely at the glass held in Coghlan's cupped hands. Coghlan felt like a fool.

"Abracadabra 750 Fatima Miss Mannard is very beautiful!" he said in a theatrical voice. Then he added placidly, "Any other words would have done as well. Put down the glass, Mr. Coghlan, and look at it."

Coghlan put down the goblet and took his hands away. There was a gold-piece in the goblet. It was an antique—a tendirhem piece of the Turkish Empire.

"I could not build up the illusion," said Appolonius, "but it was deceptive, was it not?"

"How'd you do it?" asked Mannard interestedly.

"At eye-level," said Appolonius, "you cannot see the bottom of a goblet filled with water. Refraction prevents it. I dropped in the coin and held it at the level of your eyes. So long as it was held high, it seemed empty. That is all."

Mannard grunted.

"It is the principle which counts!" said Appolonius. "I did something of which you knew nothing. You deceived yourselves, because you thought I was getting ready to do a trick. I had already done it. That is the secret of magic."

He fished out the gold-piece and put it in his vest pocket, and Coghlan thought sourly that this trick was not quite as convincing as his own handwriting, his own fingerprints and most private thoughts, written down over seven centuries ago.

"Hm . . . I think I'll mention your visitors to the police," said Mannard. "I'm mentioned. I may be involved. It's too elaborate to be a practical joke, and there's that mention of somebody getting killed. I know some fairly high Turkish officials . . . you'll talk to anyone they send you?"

"Naturally." Coghlan felt that he should be relieved, but he was not. Then something else occurred to him.

"By the way," he said to Appolonius, "you're in on this, too. There's a memorandum that says the 'adepts' were inquiring for you!"

He quoted, as well as he was able, the memo on the back of the page containing his fingerprints. The fat man listened, frowning.

"This," he said firmly, "I very much do not like! It is not good for my profes-

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sional reputation to be linked with tricksters. It is very much not good!"

Astonishingly, he looked pale. It could be anger, but he was definitely paler than he had been. Laurie said briskly:

"You said something about a gadget, Tommy. At—80 Hosain, you said?"

Coghlan nodded. "Yes. Duval and Lieutenant Ghalil said they were going to make inquiries there."

"After dinner," suggested Laurie, "we could take the car and go look at the outside, anyhow? I don't think Father has anything planned. It would be interesting—"

"Not a bad thought," said Mannard. "It's a pleasant night. We'll all go."

Laurie smiled ruefully at Coghlan. And Coghlan resolutely assured himself he was pleased—it was much better for him not to be anywhere with Laurie, alone. But he was not cheered in the least.

Mannard pushed back his chair.

"It's irritating!" he grunted. "I can't figure out what they're driving at! By all means, let's go look at that infernal house!"

THEY went up to Mannard's suite on the third floor of the Petra, and he telephoned and ordered the car he'd rented during his stay in Istanbul. Laurie put a scarf over her head. Somehow even that looked good on her, as Coghlan realized depressedly.

Appolonius the Great had blandly assumed an invitation and continued to talk about his political enterprise of bribery. He believed, he said, that there might be some ancient manuscripts turned up when enlightenment swept over the furtive villages of his people. Coghlan gathered that he claimed as many as two or three thousand fellow-countrymen.

The car was reported as ready.

"I shall walk down the stairs!" announced Appolonius, with a wave of his pudgy hand. "I feel somehow grand and dignified, now that someone has given me money for my people. I do not think that anyone can feel dignified in a lift."

Mannard grunted. They moved toward the wide stairs, Appolonius in the lead.

The lights went out, everywhere. Immediately there was a gasp and a crashing sound. Mannard's voice swore furiously, halfway down the flight of curving steps. A moment ago he had been at the top landing.

The lights came on again. Mannard came storming up the steps. He glared about him, breathing hard. He was the very opposite of the typical millionaire just then. He looked hardboiled, athletic, spoiling for a fight.

"My dear friend!" gasped Appolonius. "What happened?"

"Somebody tried to throw me downstairs!" growled Mannard balefully. "They grabbed my foot and heaved! If I'd gone the way I was thrown—if I hadn't handled myself right—I'd have gone over the stair-rail and broken my blasted neck!"

He glared about him. But there were only the four of them in sight. Mannard peered each way along the hotel corridors. He fumed. But there was literally nobody around who could have done it.

"Oh, maybe I slipped," he said irritably, "but it didn't feel like that! Dammit— Oh, there's no harm done!"

He went down the stairs again, scowling. The lights stayed on. The others followed. Laurie said shakily:

"That was odd, wasn't it?"

"Very," said Coghlan. "If you remember, I said I'd been told that I'd probably murder him."

"But you were right by me!" said Laurie quickly.

"Not so close I couldn't have done it," said Coghlan. "I sort of wish it hadn't happened."

They reached the lower floor of the hotel, Mannard still bristling. Appolonius walked with a waddling, swaying grace. To Coghlan he looked somehow like pictures of the Agha Khan. He

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beamed as he walked. He was very impressive. And he'd been thinking as Coghlan had thought, for in the lobby he turned and said blandly:

"You said something about a prophecy that you might murder Mr. Mannard. Be careful, Mr. Coghlan! Be careful!"

He twinkled at the two who followed him, and resumed his splendid progress toward the car that waited outside.

It was dark in the back of the car. Laurie settled down beside Coghlan. He was distinctly aware of her nearness. But he frowned uneasily as the car rolled away. His own handwriting in the book from ancient days had said, *"Make sure of Mannard. To be killed."* And Mannard had just had a good chance of a serious accident . . . Coghlan felt uncomfortably that something significant had taken place that he should have noticed.

But, he irritably assured himself, it couldn't be anything but coincidence.

III

COGHLAN breakfasted on coffee alone, next morning, and he had the dour outlook and depressed spirit that always followed an evening with Laurie these days. The trouble was, of course, that he wanted to marry her, and resolutely wouldn't even consider the possibility.

He drank his coffee and stared glumly out into the courtyard below his windows. His apartment was in one of the older houses of the Galata district, slicked up for modern times. The courtyard had probably once been a harem garden. Now it was flagstoned, with a few spindling shrubs, and the noises of Istanbul were muted when they reached it.

There came brisk footsteps. Lieutenant Ghalil strode crisply across the courtyard. He vanished. A moment later, Coghlan's doorbell rang. He answered it, scowling.

Ghalil grinned as he said, "Good-morning!"

"More mystery?" demanded Coghlan suspiciously.

"A part of it has been cleared up in my mind," said Ghalil. "I am much more at ease in my thoughts."

"I'm having coffee," growled Coghlan. "I'll get you some."

He got out another cup and poured it. He had an odd feeling that Ghalil was regarding him with a new friendliness.

"I have a letter for you," said the Turk cheerfully.

He passed it over. It was a neatly typed note, in English, on a letterhead that Coghlan could make out as that of the Ministry of Police—which is officially based in Ankara rather than Istanbul, but unofficially has followed the center of gravity of crime to the older city. The signature was clear. It was that of a cabinet minister, no less. The note said that at the request of the American, Mr. Mannard, Lieutenant Ghalil had been appointed to confer with Mr. Coghlan on a matter which Mr. Coghlan considered serious. The Minister of Police assured Mr. Coghlan that Lieutenant Ghalil had the entire confidence of the Ministry, which was sure that he would be both cooperative and competent.

Coghlan looked up, confused.

"And I thought you the suspicious character!" said Ghalil. "But you surely did the one thing a suspicious character would not do—call in the police at the beginning. Because you thought *me* suspicious!" He chuckled. "Now, if you still have doubts, I can report that you wish to confer with a person of higher rank. But it will not be easy to get anyone else to take this matter seriously! Or in quite so amicable a manner, orders or no, in view of the implied threat to Mr. Mannard and my comparative assurance that you are innocent so far—" he smiled slightly—"of any responsibility for that threat."

Coghlan had been thinking about that, too. He growled:

"It's ridiculous! I'd just barely told Mannard about it last night, when he

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had an accident and almost got himself killed, and a third party who was along had the nerve to warn me—"

Ghalil tensed. He held up his hand. "What was that?"

Coghlan impatiently told of Mannard's tripping on the stairs. "A coincidence, obviously," he finished. Then, placing the defense before any offense: "What else?"

"What else indeed?" agreed Ghalil. He said abruptly, "What do you think of 80 Hosain? You saw it last night."

Coghlan shrugged his shoulders. The carload of them—Mannard, Laurie, Appolonius the Great and Coghlan—had driven deep into the Galata quarter and found 80 Hosain. It was a grimy, unbelievably ancient building, empty of all life, on a winding, narrow, noisesome alleyway. When the car found it, there were shabby figures gathered around, looking curiously at police outside it. Ghalil himself came to ask what the people in the car wanted. Then the whole party went into the echoing deserted building and up to the empty back room on the second floor.

COGHLAN could see and smell that room now. The house itself had been unoccupied for a long time. It was so old that the stone flooring on the ground level had long since worn out and been replaced by wide, cracked planks now worn out themselves. The stone steps leading to the second story were rounded in their centers by the footsteps of past generations. There were smells. There was mustiness. There was squalor and evidences of neglect continued for a millenium. There were cobwebs and dirt and every indication of degradation; yet the door-lintels were carved stone from a time when a workman was an artisan and did the work of an artist.

The back room was empty of everything but the grime of ages. Plaster had fallen, revealing older plaster behind it, and on the older plaster there were traces of color as if the walls had been painted in figures no longer to be made out. And there was one place, on the western wall, where the plaster was wet. A roughly square spot a foot-and-a-half by a foot-and-a-half, about a yard above the floor-level, glistening with moisture.

In Coghlan's living-room, with Ghalil looking interestedly at him, Coghlan frowned.

"There was nothing in the room. It was empty. There was no 'gadget' there as Duval's book declared."

Ghalil said mildly:

"The book was of the thirteenth century. Would you expect to find anything in a room after so long a time, so many lootings, the use of twenty generations?"

"I was guided only by Duval's book," said Coghlan with some irony.

"You suspect that wet spot on the wall, eh?"

"I didn't understand it," admitted Coghlan, "and it was—peculiar. It was cold."

"Perhaps it is the gadget," said Ghalil. He said in mild reproof, "After you left, I felt it as you had done. It was very cold. I thought my hand would be frost-bitten, when I kept it there for some time. In fact, later I covered the spot with a blanket, and frost appeared under it!"

Coghlan said impatiently, "Not without refrigerating apparatus, and that's out of the question!"

Ghalil thought that over. "Yet it did appear."

"Would refrigerating apparatus be called a gadget?" Coghlan wondered.

The Turk shook his head. "It is peculiar. I learn that it is traditional that a spot on the plaster in that room has always been and will always be wet. It has been considered magical, and has given the place a bad name—which is one reason the house is empty. The legend is verifiable for sixty years. Refrigeration was not known in small units so long ago. Would that coldness be another impossibility of this affair?"

Coghlan said, "We talk nonsense all the time!"

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GHALIL thought, again. "Could refrigeration be a lost art of the ancients?" he asked with a faint smile, "and if so, what has it to do with you and Mr. Mannard and this—Appolonius?"

"There aren't any lost arts," Coghlan assured him. "In olden times people did things at random, on what they thought were magical principles. Sometimes they got results. On magical reasoning, they used digitalis for the heart. It happened to be right, and they kept on. On magical reasoning, they hammered copper past all sanity. It got hardened, and they thought it was tempered. There are electroplated objects surviving from a thousand years and more ago. The Greeks made a steam turbine in the classic age. It's more than likely that they made a magic lantern. But there could be no science without scientific thinking. They got results by accident, but they didn't know what they were doing or what they'd done. They couldn't think technically .... so there are no lost arts, only redefinitions. We can do everything the ancients could."

"Can you make a place that will stay cold for sixty years—let alone seven hundred?"

"It's an illusion," said Coghlan. "It must be! You'd better ask Appolonius how it's done. That's in his line."

"I would be pleased if you would examine again that cold place on the wall at 80 Hosain," said Ghalil ruefully. "If it is an illusion, it is singularly impenetrable!"

"I promised," said Coghlan, "to go on a picnic today with the Mannards. They're going up along the Sea of Marmora to look at a piece of ground."

Ghalil raised his eyebrows.

"They plan a home here?"

"A children's camp," Coghlan explained with reserve. "Mannard's a millionaire. He's given a lot of money to the American College, and it's been suggested that he do something more. A camp for slum-children is projected. He may finance it to show what can be done for children's health by the sort of thing that's standard in the United States. He's looking over a site. If he puts up the money, the camp will be handled by Turkish personnel and the cost and results worked out. If it's successful, the Turkish Government or private charities will carry it on and extend it."

"Admirable," said Lieutenant Ghalil. "One would not like to see such a man murdered."

Coghlan did not comment. Ghalil rose.

"But—come and examine this refrigeration apparatus of ancient days, please! After all, it is undoubtedly mentioned in a memorandum in your handwriting of seven hundred years ago! And—Mr. Coghlan, will you be careful?"

"Of what?"

"For one, Mr. Mannard." Ghalil's expression was wry. "I do not believe in things from the past any more than you do, but as a philosopher and a policeman I have to face facts even when they are impossible, and possibilities even when they are insane. There are two things foretold which disturb me. I hope you will help me to prevent them."

"The murder of Mannard, of course. But what's the other?"

"I should regret that, and I guard against it," Ghalil told him. "But I would be intellectually more disturbed if you should cut your thumb. A murder would be explicable."

Coghlan grinned. "I won't. That's not likely!"

"That is why I dread it. Please come to 80 Hosain when you can. I am having the room examined microscopically—and cleaned in the process. I even have it garrisoned, to prevent any preparation of illusion."

He waved his hand and went away.

AN HOUR later, Coghlan joined the excursion which was to inspect a site for a possible children's camp. An impressive small yacht lay at dock on the shore of the Golden Horn. There

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was a vast confusion everywhere. From Italian freighters to cabin-cruisers, from clumsy barges to lateen-rigged tubs and grimy small two- and three-passenger rowboats—every conceivable type of floating thing floated or moved or was docked all about. The yacht had been loaned as a grand gesture by its owner, so that Mannard would make a gift of money the yacht's owner preferred to spend otherwise.

Laurie looked relieved when Coghlan turned up. She waved to him as he came aboard.

"News, Tommy! Your friend Duval telephoned me this morning!"

"What for?"

"He sounded hysterical and apologetic," Laurie told him, "because he'd been trying to reach Father, and couldn't. He said he could not tell me the details or the source of his information, but he had certain knowledge that you intended to murder my father. He nearly collapsed when I said sweetly, 'Thank you so much, *M'sieur* Duval! So he told us last night!' She grinned. "It wasn't quite the reaction he expected!"

"If he were an honest man," Coghlan mused, "that's just exactly what he'd have done—tried to warn your father. But he couldn't say why he thought a murder was in the wind, because that's unbelievable. Maybe he is honest. I don't know."

Appolonius the Great came waddling down to the dock, in a marvelous yachting costume. He beamed and waved, and the sunlight gleamed on his wristwatch. A beggar thrust up to him and whined, holding out a ragged European cap. The beggar cringed and gabbled shrilly. And Appolonius the Great paused, looked into the extended cap with apparent stupefaction, and pointed; whereupon the beggar also looked into the cap, yelped, and fled at the top of his speed, clutching the cap fast. Appolonius came on, shaking all over with his amusement.

"You say?" he asked amiably as he reached the yacht's deck. "Indeed I cannot resist such jests! He held out his cap, and I looked, and feigned surprise—and there was a handful of jewels in the cap! True, they were merely paste and trinketry, but I added a silver coin to comfort him when he discovers they are worthless."

He waddled forward to greet Mannard. There was around the yacht that pandemonium which in the Near East accompanies every public activity. Men swarmed everywhere. Even the yacht carried a vastly larger crew than seemed necessary, there being at least a dozen of them on a boat that three American sailors would have navigated handily. Sailors seemed to fall all over each other in getting ready for departure.

The party of guests was not large. There was a professor from the College. A local politico, the owner of the proposed campsite. A lawyer. The Turkish owner of the yacht glowed visibly as last-minute baskets of food came aboard. He was not paying for them.

COGHLAN and Laurie sat at the very stern of the yacht when at last it pulled out and went on up the Golden Horn. There was little privacy, because of the swarming number of the crew, and Coghlan did not try for greater privacy. He looked at the panorama of the city which had been the center of civilization for a thousand years—and now was a rabbit-warren of narrow streets and questionable occupations. Laurie, beside him, watched the unfolding view of minarets and domes and the great white palace which had been the Seraglio, and the soaring pile of Hagia Sophia, and all the beauty of this place, notorious for its beauty for almost two thousand years. There was bright sunshine to add to it, and the flickering of sun-reflections on the water. These things seemed to cast a glamor over everything. But Laurie looked away from it at Coghlan.

"Tommy," she said, "will you tell me what was in that mysterious message that you wouldn't tell last night? You

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said it was about me."

"It was nothing important," said Coghlan. "Shall we go up to the pilot-house and see how the yacht's steered?"

She faced him directly, and smiled.

"Does it occur to you that I've known you a long time, Tommy, and I've practically studied you, and I can almost read your mind—I hope?"

He moved restlessly.

"When you were ten years old," she said, "you told me very generously that you would marry me when you grew up. But you insisted ferociously that I shouldn't tell anybody!"

He muttered something indistinct about kids.

"And you took me to your Senior Prom," she reminded him, "even if I had to make my father leave Bogota two months early so I'd be around when it was time for you to pass out the invitation. And you were the first boy who ever kissed me," she added amiably, "and until—well—lately you used to write me very nice letters. You've paid attention to me all our lives, Tommy!"

He said:

"Cigarette?"

"No," she said firmly. "I'm working up to something."

"No use talking," he said sourly. "Let's join the others."

"Tommy!" she protested. "You're not nice! And here I am trying to spare you embarrassment!" She grinned at him. "You wouldn't want my father to ask what your intentions are!"

"I haven't any," he said grimly. "If I were only a rich woman's husband I'd despise myself. If I didn't, you'd despise me! It wouldn't work out. And I wouldn't want to be just your first husband!"

Her eyes grew softer, but she shook her head reproachfully.

"Then—how about being a brother to me? You ought to suggest that, if only to be polite."

Coghlan had known her a long, long time. Her air of comfortable teasing would have fooled people. But Coghlan felt like a heel.

He muttered under his breath. He stood up.

"You know damned well I love you!" he said angrily. "But that's all! I can't turn it off, but I can starve it to death! And there's no use arguing about it! You'll be leaving soon. If you weren't, I wouldn't come near you here! Nobody could be crazier about anybody else than I am about you, but you can't wear me down. Understand?"

"I wouldn't want to break your spirit, Tommy," said Laurie reasonably. "But I'm getting desperate!"

Then she smiled. He growled and strode irritably away. When his back was turned, her smile wavered and broke. And when he looked back at her a little later she was staring out over the water, her back to the others on the yacht. Her hands were tightly clenched.

THE YACHT steamed on up the Bosphorus. There were the hills on either side, speckled with dwellings which looked trim and picturesque from the water, but would be completely squalid at close view. The sky was deepest azure, and this was the scene of many romantic happenings in years gone by. But the owner of the yacht talked expansively to Mannard in the thickest of Turkish accents. The professor from the American College was deep in discussion with the lawyer on the responsibility of the municipal government for the smell of decaying garbage which made his home nearly uninhabitable. The owner of the site to be inspected spoke only Turkish. That left only Appolonius the Great.

Coghlan brought up the subject of the cryptic and quite incredible message in the *Alexiad*.

"Ah, it is a mystification," said Appolonius genially. "It is also, I think, an intended swindle. But Mr. Mannard has spoken to the police. They will inquire into those persons. It would be unprofessional for me to interfere!"

Coghlan said shortly:

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"Not if it's a scheme for a swindle."

"That," acknowledged Appolonius, "disturbs me. As you know, I have recently received a large sum from a source that would surprise you, to bribe my people to freedom. I do not like to be associated with downright scoundrels! Therefore I stand aside—lest it be considered that I am a scoundrel too!"

Coghlan turned away, considering.

This was not a cheerful day for him. He doggedly would not go back to Laurie. It had cost him a great deal to make the decision he'd made. He wouldn't change it. There was no use talking to her. Thinking about her made him miserable. He tried, for a time, to put his mind on the matter of 80 Hosain; to imagine some contrivance, possible to the ancients, which would amount to apparatus to produce cold. In Babylonia the ancients had known that a shallow tray, laid upon blankets, would radiate heat away at night and produce a thin layer of ice by morning on a completely windless and cloudless night. The heat went on out to empty space, and the blanket kept more heat from rising out of the earth. But Istanbul was hardly a place of cloudlessness. That wouldn't work here. The ancients hadn't understood it, anyhow. He gave it up.

The yacht drew nearer to the shore as the Sea of Marmora expanded from the Bosphorus. It tied up to a rickety wharf, with seemingly innumerable sailors clumsily achieving the landing. Mannard went ashore to inspect the proposed campsite. Sailors carted ashore vast numbers of baskets, folding tables, and the other apparatus for an al fresco luncheon. Coghlan smoked dourly on the yacht's deck.

Laurie went ashore, and he sat still, feeling as ridiculous as a sulking child. Presently he wandered across the wharf and moved about at random while the lunch was spread out. When the exploring party came back, Coghlan allowed himself to be seated—next to Laurie. She casually ignored their recent discussion and chatted brightly. He sank into abysmal gloom.

The matter of the proposed children's camp was discussed at length in at least three languages. Luncheon progressed, with sailors acting as waiters and bringing hot dishes from the galley of the yacht. The owner of the land rose and made a florid, perspiring speech in the fond hope of unloading land he could not use, at a fancy price he could. The professor from the American College spoke warmly of Mannard, and threw in a hint or two that his own specialty could use some extra funds. Coghlan saw clearly that everybody in the world was out to get money from Mannard by any possible process, and grimly reiterated to himself his own resolution not to take part in the undignified scramble by trying to marry Laurie.

The sailors brought coffee. Coghlan drank his while the speechmaking went on. Mannard talked absorbedly to the lawyer, and to the owner of the land. The children's camp seemed to be practically assured. That, to Coghlan, was one bright spot in a thumping bleak day.

He saw Mannard start to drink his coffee, then feel the cup with his hands and give it to a sailor to be taken back to the yacht to be replaced with hot coffee. It had gotten cold.

Laurie chatted brightly with Appolonius. He beamed at her.

A sailor came back with Mannard's cup. He felt it, as he always did. He lifted it toward his lips.

There was a violent cracking sound. Echoes rang all about. Voices stopped.

Mannard was staring in stupefaction at the coffee-cup in his hand. It was broken. It had been smashed by a bullet. Coffee was spilled everywhere, and Mannard absurdly held the handle of the cup from which he had been about to drink.

Coghlan was in motion even as he saw in his mind's eye the phrase in his own handwriting on a yellowed sheepskin page:

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"Make sure of Mannard. To be killed."

IV

IT WAS preposterous. Mannard stood up abruptly, raging, with the smashed handle of the coffee-cup in his hand. He did not seem to realize that by rising he became an even better target. There was an instant's stunned immobility, on the part of everyone but Coghlan. He plunged forward, toppling the flimsy table in a confusion of smashed china and scrambled silverware.

"Get down!" snapped Coghlan.

He pushed Laurie's father back into his seat. All about was absolute tranquillity save for the white-faced men who picked themselves up with stiff, frightened movements after Coghlan's rush had toppled them. The hillsides were green and silent save for the minor cries of insects. The water was undisturbed. Some sailors began to run ashore from the yacht.

"Everybody gather round here!" commanded Coghlan angrily. "The shot was at Mannard! Get close!"

Laurie was the only one who seemed to obey. She was white-faced as the rest, but she said:

"I'm here, Tommy. What do we do?"

"Not you, damn it! Somebody shot at your father! If we get around him and get him to the yacht, they can't see him to shoot again. You get in the center here too!"

He commanded the Turkish-speaking sailors with violent gestures, and they obeyed his authoritative manner. He and Laurie and the sailors fairly forced the sputtering, angry Mannard out the wharf and onto the craft moored at its end. The other members of the picnic-party were milling into action. The lawyer scuttled aboard. The owner of the land was even before him. Only Appolonius sat where his chair had toppled, his face gray and filled with an astounded expression of shock. The professor from the American College went on board and disappeared entirely. Coghlan went back and dragged at Appolonius. The fat man scrambled to his feet and went stiffly out the wharf and on board.

"Somebody who can talk Turkish," snapped Coghlan, "tell the sailors to help me hunt for whoever fired that shot! He's had a chance to get away, but we can look for him, anyhow!"

A voice, chattering, said unintelligible things. Sailors went ashore, Coghlan in the lead. They obeyed Coghlan's gestured commands and tramped about with him in the brushwood, hunting industriously and without visible timidity. But Coghlan fumed. He could not give detailed commands. He couldn't be sure they were watching for footprints or a tiny ejected shell which would tell at least where the would-be murderer had been.

There were shouts from the yacht. Coghlan ignored them, searching angrily but with an increasing sensation of futility. Then Laurie came running ashore.

"Tommy! It's useless! He's gone! The thing to do is to get back to Istanbul and tell the police!"

Coghlan nodded angrily, wondering again if the marksman who had missed Mannard might not settle for Laurie. He stood between her and the shore, and shouted and beckoned to the sailors. He led them back to the yacht, in a tight circle around Laurie.

The yacht cast off with unseemly haste. It sped out from the shore and headed back for Istanbul. Mannard sat angrily in a deck-chair, his eyes hard. He nodded to Coghlan.

"I didn't see the point of protecting me," he admitted grimly, "not at the time. But that crazy business you were telling me last night did hint at this." Then he said with explosive irritation. "Dammit, either they meant to kill me without asking for money, or they don't care much whether they kill me or not!"

Coghlan nodded. "They might figure on being reckless with you," he said

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coldly, "so if you get killed that'll be all the more reason for Laurie to pay up if something happens. Or—they might figure that if they're reckless enough with you, you'll pay up the more quickly if they threaten Laurie."

"What's that?" demanded Mannard sharply.

"I don't know what the scheme is," Coghlan told him. "It looks crazy! But though the threat seems directed against you, the danger may be even greater for Laurie."

Mannard said grimly:

"Yes. That's something to watch out for. Thanks."

He ground his teeth audibly.

THE YACHT ploughed through the water back toward Istanbul. The sun shone brightly on the narrow blue sea. The hills on either side seemed to shimmer in the heat. But the atmosphere on the yacht was far from relaxed. The sailors bore high interest beneath a mask of discretion, most of them managing to occupy themselves near the Turkish guests, who huddled together and talked excitedly.

Laurie put her arm in Coghlan's.

"There's such a thing as courage, Tommy," she said, "and such a thing as recklessness. You took chances, searching on shore. I wouldn't like you to be killed."

"It could be," he said harshly, "that the whole idea is to scare one or the other of you so completely—even if one of you had to be killed—that you'll be ready to pay hugely at the first demand for money."

"But how—"

He said fiercely: "If you were kidnapped, for instance! Be careful—hear me? Don't go anywhere in response to a note of any kind."

He went impatiently away and paced up and down, alone, until the yacht docked once more.

Then there was more confusion. Mannard was intent upon an immediate conference with police. Coghlan and Laurie went with him to headquarters, in a cab.

Presently, there was some embarrassment. Mannard could not bring himself to tell so incredible a tale as that a book seven-hundred years old had had a seven-hundred-year-old message in it which said he was to be killed, and that the shot which had so narrowly missed him today seemed to be connected with it.

He doggedly told only the facts of the event itself. No, he had no enemies that he knew of. No, he had not received any message, himself, that he could consider a threat. He could not guess what was behind the attempt on his life.

The police were polite and deeply concerned. They assured him that Lieutenant Ghalil would be notified immediately. He had been assigned to a matter Mr. Mannard had mentioned before. As soon as it was possible to reach him . . .

That affair, inconclusive as it was, took nearly an hour of time. Mannard fumed, in the cab on the way back to the hotel.

"Ghalil's mixed up in this all the way through!" he said darkly. "It could be on orders, or it could be something else."

"I know he has orders," said Coghlan briefly. "And I think I know where he'll be. I'll hunt him up. Now."

The cab stopped before the Hotel Petra. Mannard and Laurie got out. Coghlan stayed in. Laurie said:

"Take care of yourself, Tommy. Please!"

The cab pulled out into traffic and bounded for 80 Hosain with the mad, glad disregard for all safety rules which is the lifeblood of Istanbul taxicabs.

80 Hosain, by daylight, was even less inviting to look upon than it had seemed the night before. The street was narrow and unbelievably tortuous. It was paved with worn cobbles which sloped toward its center in the vain hope that rain would wash street-debris away. Because of its winding, it was never possible to

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see more than fifty feet ahead. When the building at last appeared, there was a police-car before it and a uniformed policeman on guard at the door. His neatness was in marked contrast to his squalid surroundings—but even so this section might have been a most aristocrotic quarter in the times of the Byzantine Empire.

Coghlan was admitted without question. There was already an extensive process of cleaning-up underway. It smelled much less offensive than before. He went up the stairs and into the back room which was mentioned in the message he simply must have written, and simply hadn't.

DUVAL sat on a campstool in one corner, more haggard than before. There were many books on the floor beside him, and one lay open in his hand. Ghalil smoked reflectively on a window-sill. The blank stone wall of the next building showed half-a-dozen feet beyond. Only the grayest and gloomiest of light came in the windows. Ghalil looked up and seemed pleased when Coghlan entered.

"I hoped you would come after the boat-trip," he said cordially. "M. Duval and myself are still exchanging mutual assurances of our lunacy."

"Up in the Sea of Marmora," said Coghlan curtly, "somebody tried to kill Mannard. Since that's supposedly a part of this affair, it may be crazy but it's surely serious! Did Headquarters tell you about it?"

"There was no need," said Ghalil mildly. "I was there."

Coghlan stared.

"I have believed Mr. Mannard in danger from the beginning," Ghalil explained apologetically. "I underestimated it, to be sure. But after you told me of the affair of last night—when even he believes he tripped—I have taken every possible precaution to guard him. So of course I went on the yacht."

Coghlan said incredulously, "I didn't see you!"

"It was stifling below-decks," said Ghalil wryly. "But most of the sailors were my men. You must have noticed that they were not skilled seamen?"

Coghlan found all his ideas churned up again.

"But—"

"He was in no danger from the bullet," Ghalil assured him. "I was concerned about the luncheon. In Istanbul when we think of an impending murder we think not only of knives and guns, but of poison. I took great pains against poison. The cook on the yacht tasted every item served, and he has a talent for detecting the most minute trace of the commoner poisons. An odd talent to have, eh?"

"But Mannard was shot at!" protested Coghlan.

Lieutenant Ghalil nodded. He puffed tranquilly on his cigarette.

"I am an excellent marksman," he said modestly. "I watched. At the last possible instant—and I am ashamed to say only by accident—it was discovered that his coffee was poisoned."

Coghlan found suspicion and bewilderment battling for primacy in his mind.

"You recall," said Ghalil carefully, "that Mr. Mannard talked absorbedly and at length. When he went to drink his coffee, he found it cold. He sent his cup to be refilled. I am disturbed," he interjected vexedly, "because only by accident he is alive! The cook—my talented man—poured aside the cooled coffee and refilled Mr. Mannard's cup. And he has a fondness for tepid coffee, which I find strange. He went to drink the coffee Mr. Mannard had returned—and something had been added to it. More might remain in the cup. He told me instantly. There was no time to send a message. Mr. Mannard already had the cup in his hand. There was need for spectacular action. And I was watching the dinner-party, prepared to intervene in case of such need. I am an excellent marksman and there was nothing else

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to do, so I shot the cup from his hand."

COGHLAN opened his mouth, managed to close it again. "You—shot the cup . . . Who tried to poison him?"

Ghalil pulled a small glass bottle from his pocket. It was unstoppered, but there was a film of tiny crystals in it as if some liquid had dried.

"This," he observed, "fell from your pocket as you hunted in the brushwood for the marksman who actually was on the yacht. One of my men saw it fall and brought it to me. It is poison."

Coghlan looked at the bottle.

"I'm getting a little bit fed up with mystification. Do I get arrested?"

"The fingerprints upon it are smudged," said Ghalil. "But I am familiar with your fingerprints. They are not yours. It was slipped into your pocket—not fully, therefore it fell out. You do not get arrested."

"Thank you," said Coghlan, with irony.

His foot pushed aside one of the books on the floor beside Duval. They were of all sizes and thickness, and all were modern. Some had the heavy look of German technical books, and one or two were French. The greater number were in modern Greek.

"M. Duval searches history for references which might apply to our problem," said the Turk. "I consider this a very important affair. That, in particular—" he pointed to the wet spot on the wall— "seems to me most significant. I am very glad that you came here, with your special knowledge."

"Why? What do you want me to do?"

"Examine it," said Ghalil. "Explain it. Let me understand what it means. I have a wholly unreasonable suspicion I would not like to name, because it has only a logical basis."

"If you can make even a logical pattern out of this mess," said Coghlan bitterly, "you're a better man than I am. It simply doesn't make sense!"

Ghalil only looked at him expectantly. Coghlan went to the wet spot. It was almost exactly square, and there was no trace of moisture above it or on either side. Some few trickles dripped down from it, but the real wetness was specifically rectangular. Coghlan felt the wall all about it. Everywhere except in the wet spot the wall had the normal temperature of a plaster coating. The change of temperature was exactly what would have been apparent if a square-shaped freezing unit had been built into the structure. The plaster was rotten from long soaking. Coghlan took out a pocket-knife and dug carefully into it.

"What rational connection can this have with that stuff in the book, and with somebody trying to kill Mannard?" he demanded as he worked.

"No rational connection," admitted Ghalil. "A logical one. In police work one uses reason oneself, but does not expect it of events."

An irregularly shaped patch of wetted plaster cracked and came away. Coghlan looked at it and started.

"Ice!" he said sharply. "There must be some machinery here!"

The space from which the plaster had come was white with frost. Coghlan scraped at it. A thin layer of ice, infinitesimally thin. Then more wet plaster, which was not frozen. Coghlan frowned. First ice, then no ice—and nothing to make the ice where the ice was. A freezing coil could not work that way. Coldness does not occur in layers or in thin sheets. It simply does not.

Coghlan dug angrily, stabbing with the point of the knife. The knife grew very cold. He wrapped his handkerchief about it and continued to dig. There was wetness and rotted plaster for another inch. Then the heavy stone wall of the building.

"The devil!" he said angrily. He stood back and stared at the opening.

THERE was silence. He had made a hole through rotted plaster, and found nothing but a thin layer of ice, and then more rotted plaster. He looked at it blankly. Then he saw that though

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the frost had been cut away, there was a slight mist in the opening he had made. He blew his breath into the hole. He made an astonished noise.

"When I blew my breath there, it turned to fog when it went through the place where the plaster layers joined!" His tone was unbelieving.

"There is refrigeration?" asked Ghalil.

"There's nothing!" protested Coghlan. "There's no possible explanation for a cold space in the middle of air!"

"Ah!" said the Turk in satisfaction. "Then we progress! Things which are associated with the same thing are associated with each other. This associates with the impossibility of your fingerprints and your handwriting and the threat to Mr. Mannard!"

"I'd like to know what does this trick!" said Coghlan, staring at the hole. "The heat's absorbed, and there's nothing to absorb it!"

He unwrapped his handkerchief from the knife, and scrubbed the cloth at the wall until a corner was set. He poked the wetted cloth into the hole he'd made. A moment later he pulled it out. There was a narrow, perfectly straight line of ice across the wetted linen.

"There's never been a trick like this before!" he said in amazement. "It's something really new!"

"Or extremely old," said Ghalil mildly. "Why not?"

"It couldn't be!" snapped Coghlan. "We don't know how to do it! You can bet the ancients didn't! It couldn't be anything but a force-field of some sort, and there's no known force-field that absorbs energy! There just isn't any! Anyhow, how could they generate a force-field that was a plane surface?"

He began to dig again, nervously, at the edge of the wet spot. The plaster was harder here.

Duval said hopelessly, "But what would such a thing have to do with the history of the Byzantine Empire, and fingerprints, and M. Mannard—"

Coghlan jabbed at the plaster.

There was a sudden, brittle sound as the knifeblade snapped. The broken end tinkled on the floor.

Coghlan stood frozen, looking down at his thumb. The breaking blade had cut it. There was dead silence in the room.

"What is the matter?"

"I've cut my thumb," said Coghlan briefly.

Ghalil, eyes blank, got up and started across the room toward him. "I would like to see—"

"It's nothing," said Coghlan.

To himself he said firmly that two and two are four, and things which are equal to the same thing are equal to each other, and—

He pressed the edges of the cut together, closed his fist on it, and put the fist firmly in his pocket.

"This business of the wall," he said casually—too casually—"has me bothered. "I'm going back to my place and get some stuff to make a couple of tests."

Ghalil said quickly:

"There is a police-car outside. I will have the driver take you and bring you back."

"Thanks," said Coghlan.

He thought firmly: two and two is always four, without exception. Five and five is ten. Six and six is twelve . . . There is no such thing as a fingerprint showing a scar that does not exist, and then that scar being made afterward. . . .

They went down the stairs together. Ghalil gave instructions to the driver. From time to time he glanced very thoughtfully at Coghlan's face. Coghlan climbed in the car. It started off, headed for his home.

He sat still for minutes as the trim car threaded narrow streets and negotiated sharp corners designed for donkey-traffic alone. The driver was concerned only with the management of his car. Coghlan watched him abstractedly. Two and two. . . .

He took his hand out of his pocket

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and looked at the cut on his thumb very carefully. It was probably the most remarkable cut in human history. It was shallow, not a serious matter at all, in itself; but it would leave—Coghlan could not doubt—a scar exactly like the one on the print on the sheepskin page which chemical and spectroscopic examination said was seven-hundred years old.

Coghlan put the impossible hand back in his pocket. "I don't believe it!" he said grimly. "I don't believe it!"

V

THE DRIVER had evidently been instructed to wait. When Coghlan got out of the car he smiled politely, set his handbrake, and turned off the motor. Coghlan nodded and went into the courtyard below his windows. He felt a very peculiar dogged anger, and was not at all certain what he felt it toward.

He headed for the stairway to his apartment. Across the flagstoned courtyard, a plump figure came disconsolately out of that stairway. It was Appolonius the Great. He was not twinkling as usual. He looked desperately worried. But his expression changed at sight of Coghlan.

"Ah, Mr. Coghlan!" he said delightedly. "I thought I had missed you!"

Coghlan said politely:

"I'm glad you didn't. But I'm only here on an errand—"

"I need only a moment," said Appolonius, beaming. "I have something to say which may be to your advantage."

"Come along," said Coghlan.

He led the way. Appolonius, a few hours back, had looked as deeply concerned as any man could look. Now he appeared more nearly normal. But he was still not his usual unctuous self. He came toiling up the stairs with his customary smile absent as if turned off by a switch. When Coghlan opened the door for him, however, the smile came back as if the same switch had been turned again. Coghlan had a sudden startled feeling that Appolonius might be dangerous.

"Just a moment," he said.

He went into the bath and washed out the small cut and put antiseptic on it. It was not much deeper than a scratch, but he wanted to avoid a scar if possible. A scar would mean that the fingerprint on that seven-hundred-year-old page of sheepskin was authentic; was actually his. And he was not willing for that to be true. He came back into the living-room to find Appolonius sitting in a chair on the far side of the room from the open windows.

"Now I'm at your service," said Coghlan. "That was a bad business today—about Mannard."

Appolonius looked at him steadily, with a directness and force that was startlingly unlike his usual manner.

"I have information," he said evenly. "May I show you my information?"

Coghlan waited.

"I am a professional illusionist," said Appolonius, that odd force now in his voice. "Deceptions are my profession. My fame is considerable."

"So I've heard," agreed Coghlan.

"Of course," said Appolonius, "I do not use all my knowledge of illusion on the stage. Much of it would be lost upon theatrical audiences." His voice changed, became deliberately sarcastic. "In my native country there is a superstition of evil spirits. The Magi—the priesthood—the holders of the traditions and lore of—ah—Neoplatonism, make use of this belief. They foster it, by driving away numerous evil spirits. The process is visible. Suppose I assured you that there was an evil spirit in this very room, listening to our talk?"

"I'd be a trifle doubtful," said Coghlan gently.

"Allow me," said Appolonius politely, "to demonstrate."

He glanced about the room as if looking for some indication which only he would see. Then he pointed a pudgy finger across the room, toward a table near the open windows. His wrist-watch

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showed itself, indented in his fat wrist. He uttered a series of cryptic syllables in a round, authoritative voice.

There was a sudden roaring noise. Smoke rushed up from the table. It formed a ghostly, pear-shaped figure inside the room. It hovered a moment, looking alive and menacing, then darted swiftly out the window. It was singularly convincing.

COGHLAN considered. After a moment he said thoughtfully:

"Last night you explained the principle of magic. You do something in advance, which I know nothing about. Then, later, you do something else which seems to produce remarkable results. And I am supposed to think that what you do later produced the results which you had arranged earlier."

"That is true. But this particular demonstration?"

"I'd guess," suggested Coghlan, "that you put a little smoke-squib on the table there—I hope in an ashtray. It had a fuse, which you lighted from your cigarette. You did this while I was bandaging my finger in the other room. You knew how long the fuse would burn. And you have a sweep-second watch on your wirst. Still, you must have had long practise timing a conversation to lead up to your effect at just the instant the fuse will set off the squib."

Appolonius' eyes grew intent. Coghlan added:

"And the table's by the window and there's a draft going out. It looked like an evil spirit leaping up from my ashtray, and then flowing out the window and away. Effective!"

"A compliment from you, Mr. Coghlan," said Appolonius, unsmiling, "is a compliment indeed. But I penetrate your illusions as readily as you do mine. More readily!"

Coghlan looked at his bandaged thumb, and then up. "Now, what do you mean by that?"

"I think it would be well to consider," said Appolonius, harshly, "that I can unmask you at any instant."

"Oh!" said Coghlan, in lively interest. "You think I'm in a conspiracy with Duval and Lieutenant Ghalil to swindle Mannard out of some money?"

"I do," said Appolonius. "I could explain to Mr. Mannard. Shall I?"

Coghlan found himself amused.

"So you know everything! Tell you what, Appolonius. If you'll explain the refrigeration business I'll let you in on everything else!" He explained carefully: "I mean the refrigeration at 80 Hosain, where we went last night. Elucidate that, and I'll tell you everything I know!"

Appolonius' eyes wavered. He said contemptuously:

"I am not to be trapped so easily! That is a foolish question!"

"Try to answer it!" Coghlan waited with a dry patience. "You can't? My dear Appolonius! You don't even know what I'm talking about! You're a faker, trying to cut in on a swindle by a bluff! Clear out!"

There were sounds out in the courtyard. Footsteps. Appolonius looked more menacing still. Coghlan snapped:

"Clear out! You bother me! Get going!"

He opened the door. There were footsteps at the bottom of the stairs. Appolonius said nastily:

"I have taken precautions! If anything should happen to me—you would be sorry!"

"I'd be heart-broken!" said Coghlan impatiently. "Shoo!"

He pushed Appolonius out and closed the door. He went to the small room in which he kept his private experimental equipment. As an instructor in physics he worked on a limited budget at the college. He had his classes build much of the apparatus used, both to save money and because they would learn more that way. But some things he had to build himself—again to save money, and for the plain satisfaction of the job. Now he began to pack stray items. A couple of thermometers. Batteries and a

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couple of coils and a headset that would constitute an induction balance when they were put together. A gold-leaf electroscope. He got out the large alnico magnet that had made a good many delicate measurements possible. He was packing a scintillometer when his doorbell rang.

He answered it, scowling. There stood Mannard and Laurie, studying the scowl. They came in and Mannard said genially:

"Our little friend Appolonius is upset, Tommy. He's not himself. What'd you do to him?"

"He thinks," said Coghlan, "that everything that's happened in the past thirty hours is part of a scheme to extort money from you—the scheme operating from the fourth dimension. He demanded a cut on threat of revealing all. I put him out. Did he expose me as a scoundrel and a blackmailer?"

Mannard shook his head. Then he said:

"I'm taking Laurie home. I wouldn't run away myself, but you may be right—she may be the real target of this scheme when it gets in good working order. So I'm taking her away. How about coming along?" He added bluntly: "You could pick out some real equipment for the physics laboratory at the college. It's needed, and I'll pay for it."

IT WAS transparent. Coghlan looked at Laurie. She protested reproachfully:

"It's not me, Tommy! I wouldn't ply you with cyclotrons!"

"If you want to make a gift to the lab, I'll give you a whopping list," said Coghlan. "But there's a gadget over at 80 Hosain that I've got to work out. It produces a thin layer of cold in air. I think it's a force-field of some sort, but it's a plane surface! I've got to find out what makes it and how it works. It's something new in physics!"

Laurie muttered to herself. Coghlan added:

"Ghalil's there now, waiting for me—he and Duval."

"I want to talk to that Lieutenant Ghalil," said Mannard, grumpily. "The police were going to refer this morning's shooting business to him, but I guess he wasn't too concerned! He hasn't tried to get in touch with me!"

Coghlan opened his mouth and then closed it. It would hardly be tactful to tell Mannard who had shot the cup out of his hand. If he heard that news before he got the full story, it might create a certain indignation. And it was Ghalil's story to tell. So he said:

"I'm headed back with this stuff now. You can pile in the police-car with me and talk to him right away. He'll see you get back to the hotel."

Mannard nodded. "Let's go."

Coghlan packed his equipment into a suitcase and headed for the door. As they went out, Laurie caught his arm. She said breathlessly:

"Tommy! You cut your thumb! Was it—will it—"

"Yes," he told her. "It was in the place the scar showed, and I'm afraid it will leave that scar."

She followed him down the stairs, was silent on the way across the courtyard. Her father went to dismiss the car that had brought them here. Laurie said in a queer voice:

"That book came from the thirteenth century, they said. And your fingerprints are in it. And this gadget you're talking about . . . could it take you back to the thirteenth century, Tommy?"

"I'm not planning to make the trip," he told her dryly.

"I don't want you to go back to the thirteenth century!" she said fiercely. She was even a little bit pale. "I know it's ridiculous. It's as impossible as anything could be! But I don't want you to go back there! I don't want to have to think of you as—dead for centuries, and buried in some mouldy old crypt—just a skeleton—"

"Stop it!" he said harshly.

She gulped. "I mean it!"

"I wish things were different," he

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said bitterly.

Then she grinned, still pale.

"I'll wear you down," she promised. "Won't that be nice?"

Then her father came back from the other car and they got into the police-car. It headed back for 80 Hosain.

IN THE ROOM on the second floor, Ghalil was painstakingly pulling down plaster. He had not touched the wall on which the wet spot showed. That remained as Coghlan had left it. But there had been places on the other walls where bits of plaster had fallen away. Dim colors showed through. It was becoming clear, from Ghalil's work, that the original plaster of the room had been elaborately decorated, with encaustic, most likely—wax colors laid on the wall and melted into the plaster. He had already uncovered a fragment of what must have been a most spirited mural. It appeared to deal with nymphs and satyrs, from the irregular space so far disclosed. Duval was agitatedly examining each new portion of the scene as the removal of the overlying plaster showed it. But Ghalil stopped his labor when Coghlan and the others arrived. He'd met Mannard the night before, of course.

"Ah, Mr. Mannard!" he said cordially. "We perform archaeological research!"

Mannard bristled at him.

"I've been trying to reach you to tell you about an attempt on my life today! At Police Headquarters they said they'd try to find you. They implied that all my affairs were in your lap!"

Ghalil glanced at Coghlan.

"Your affairs have at least been on my mind," he admitted. "Did not Mr. Coghlan explain the measures I took?"

"No," said Coghlan dryly. "I didn't. I'm going to work on this refrigeration affair. You tell it."

He went over to the incredible patch of moisture on the wall. Laurie went with him. Behind them, Ghalil's voice droned as Coghlan opened the suit-case of apparatus, began to fit together the induction balance. Suddenly Mannard said explosively:

"What? *You* shot the cup out of my hand?"

Laurie reared up in amazement.

"Go listen," commanded Coghlan. "I'm going to work here."

Laurie went away.

Coghlan got busy with the induction balance. There was, he soon discovered, no metal behind the wet spot on the wall. Nor above it. Nor below or on either side. There were no wires running to the place that had stayed cold "since always." There was no metal of any sort in the wall. Coghlan sweated a little. There could not be a refrigeration-apparatus without metal.

He put the induction balance away. He stuck a thermometer into the hole he'd made earlier. He moved it carefully back and forth, watching the mercury shrink. He swallowed when he saw its final reading. He hooked up the thermocouple—infinitely thin wires, of different metals, joined at their tips. He hooked on the microvoltometer. He soon found a particular spot. It was a very particular spot indeed. The tips of the wires had to be at an exact depth inside the hole. A hundredth of an inch off made the microvoltometer sway wildly. He changed a connection to get a grosser reading—millivolts instead of microvolts—and found that exact depth in the hole again. He went pale.

Laurie said:

"Tommy, I'm back."

He turned and said blankly, "A hundred and ninety millivolts! And it's below the temperature of dry ice!"

Laurie said wistfully, "I can't even raise the temperature of that, can I, Tommy?"

He didn't notice. He put down the thermocouple and brought out the alnico magnet. He wrestled the keeper off its poles.

"This doesn't make sense," he said absorbedly, "but if it is a field of force . . ."

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He turned again to the wall and the hole he'd made in it. He put the heavy, intensely strong magnet near the opening.

The opening clouded. It acquired a silvery sheen which had the look of metal as the magnet neared it. Coghlan pulled the magnet away. The look of metal vanished. He put the magnet back, and the silvery appearance was there again.

He was staring at it, speechless, when Mannard came over with Ghalil and Duval. Mannard carried the thick, ancient volume with the battered ivory medallions in its cover—and Coghlan's seven-hundred-year-old fingerprints on its first page.

"Tommy," said Mannard uncomfortably, "I don't believe this! But put one of your fingerprints alongside one of these, dammit!"

Ghalil matter-of-factly struck a match and began to make a deposit of soot on the scraping-tool which he'd used to pull down plaster. Coghlan ignored them, staring at the hole in the plaster.

"What's the matter with him?" demanded Mannard.

"Science," said Laurie, "has reared its ugly head. He's thinking."

Coghlan turned away, lost in concentrated thought. Ghalil said mildly:

"A finger, please." He took Coghlan's hand. He paused, and then deliberately took the bandage off the thumb. He pressed the thumb against the sooted scraper. Mannard, curious and uneasy, held up the book. Ghalil pressed the thumb down.

It hurt. Coghlan said: "Wait a minute! What's this?" as if startled awake.

Ghalil took the book to a window. He looked. Mannard crowded close. In silence, Ghalil passed over his pocket magnifying-glass. Mannard looked, exhaustively.

"That's hard to explain," he said heavily. "The scar and all . . ."

Coghlan said:

"All of you, look at this!"

He moved the alnico magnet to and fro. The silvery film appeared and disappeared. Ghalil looked at it, and at Coghlan's face.

"That silvery appearance," said Coghlan painfully, "will appear under the plaster wherever it's cold. I doubt that this magnet alone will silver the whole space at once, though—and it's twenty times as strong as a steel magnet, at that. Apparently a really powerful magnetic field is needed to show this up."

The silvery film vanished again when he pulled back the magnet.

"Now," said Ghalil mildly, "just what would that be? A—what you would call a gadget?"

Coghlan swallowed.

"No," he said helplessly. "There's a gadget, all right, but it must be back in the thirteenth century. This is—well—I guess you'd call this the gadget's ghost."

VI

IT GREW DARK in the room, and Coghlan finished clearing away the plaster from the wet spot by the light of police flashlights. As he removed the last layer of plaster, frost appeared. As it was exposed to view it melted, reluctantly. Then the wall was simply wet over colorings almost completely obliterated by the centuries of damp. At the edges of the square space, the wetness vanished. Coghlan dug under its edge. Plaster only. But there were designs when he cleared plaster away back from the edge. The wall had been elaborately painted, innumerable years ago.

Duval looked like a man alternately rapt in enthusiasm at the discovery of artwork which must extend under all the later plaster of this room, and hysterical as he contemplated the absolute illogic of the disclosure.

Mannard sat on a camp-chair and watched. The flashlight beams made an extraordinary picture. One played upon Coghlan as he worked. Laurie held it for him, and he worked with great care.

"I take it," said Mannard after a long

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silence, and still skeptically, "that you're saying that this is a sort of ghost of a gadget that was made in the thirteenth century."

"When," said Ghalil, from a dark corner, "there were no gadgets."

"No science," corrected Coghlan, busy at the wall. "They achieved some results by accident. Then they repeated all the things that had preceded the unexpected result, and never knew or cared which particular one produced the result they wanted. Tempering swords, for example."

Duval interposed: "The Byzantine Empire imported its finer swords."

"Yes," agreed Coghlan. "Religion wouldn't let them use the best process for tempering steel."

"Religion?" protested Mannard. "What did that have to do with tempering swords?"

"Magic," said Coghlan. "The best temper was achieved by heating a sword white-hot and plunging it into the body of a slave or a prisoner of war. It was probably discovered when somebody wanted to take a particularly fancy revenge. But it worked."

"Nonsense!" snapped Mannard.

"Some few cutlers use essentially the same process now," said Coghlan, absorbed in removing a last bit of plaster. "It's a combination of salt and nitrogenous quenching. Human blood is salt. Steel tempers better in salt water than in fresh. The ancients found that human blood gave a good temper. They didn't think scientifically and try salt water. And the steel gets a better surface-hardening still, if it's quenched in the presence of nitrogenous matter—like human flesh. Cutlers who use the process now soak scrap leather in salt water and plunge a white-hot blade in that. Technically, it's the same thing as stabbing a slave—and cheaper. But the ancients didn't think through to scrap leather and salt water. They stuck to good old-fashioned magic tempering—which worked."

He stood back. He brushed plaster dust off his fingers.

"That's all we can do without more apparatus. Now—"

He picked up the alnico magnet and moved it across all the cleared space. An oblong pattern of silveriness appeared at the nearest part of the wet place to the magnet. It followed the magnet to the edge, and ran abruptly off into nothingness as the magnet passed an invisible boundary.

"At a guess," said Coghlan thoughtfully, "this is the ghost, if you want to call it that, of what the ancients thought was a magic mirror—to look into the future with. Right, Duval?"

Duval said tensely:

"It is true that all through the middle ages alchemists wrote of and labored to make magic mirrors, as you say."

"Maybe this one started the legend," said Coghlan.

"The flashlight battery's getting weak—" Ghalil's voice from the darkness.

"We need better light and more apparatus," said Coghlan. "I doubt if we can do any more before morning."

His manner was matter-of-fact, but inside he felt oddly numb. His thumb stung a little. The cut had been irritated by plaster-dust and by the soot that got into it when Ghalil took a fresh thumbprint to show Mannard. In the last analysis, he'd cut his thumb investigating the ghost of a gadget because presently he must write a memorandum and have it delivered yesterday, which memo would be the cause of the discovery of the ghost of a—

He felt the stirring about him as the others made ready to leave. He heard Mannard say irritably:

"I don't get this! It's preposterous!"

"Quite so," said Ghalil, "so we shall have to be very careful. My Moslem ancestors had a saying that the fate of every man was writ upon his forehead. I hope, Mr. Mannard, that your fate is not writ upon the sheepskin page I showed you just now."

"But what's it all about?" demanded

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Mannard. "Who's back of it? What's back of it?"

Ghalil sighed, voicing a shrug.

THEY descended the stairs. The dark, narrow, twisty street outside looked ominous. Ghalil opened the door of the waiting police-car. He said to Mannard, in a sort of humorous abandonment of reason:

"Unfortunately, Mr. Coghlan was—or has not yet been—very specific in the memorandum which began this series of events. He said only—" he repeated the last line of Coghlan's handwriting in the sheepskin book—" 'Make sure of Mannard. To be killed.' " Mannard said bitterly: "That's specific enough!"

He and Laurie and Coghlan got into the back of the car. Lieutenant Ghalil climbed into the front seat, beside the driver. The car's motor roared as it got the car into motion.

"Your message, when you do write it, Mr. Coghlan," he said over his shoulder as the car moved toward a bend in the winding alleyway, "will be purposefully unclear. It is as if you will know that a clear message would prevent what you will wish to have happened. Thus it appears that you will write that message to bring about exactly what has already happened and will continue to happen up to the moment you write it—"

Then he snapped an explosive Turkish word to the driver. The driver jammed on the brakes. The car came to a screaming stop.

"One moment," said Ghalil politely.

He got out of the car. He looked at something in the headlight beams. He touched it very cautiously. He waved the car back, and whistled shrilly. Men came running from the house they had just left. Ghalil spoke crisply, in Turkish. They bent over the object on the cobbles of the lane. The flashlight beams seemed insufficient and they struck matches. Presently Ghalil and a policeman picked up the thing gingerly and moved it with exquisite care to the side of the alley. They put it down against a wall. There Ghalil knelt and examined it again by the light of other matches.

He got up and brushed off his hands. He came back to the car, got in. He spoke to the driver in Turkish and the car moved on again, more slowly. At the next curve it barely crawled.

"What was that?" demanded Mannard.

Lieutenant Ghalil hesitated.

"I fear it was another attempt upon your life," he said apologetically. "A bomb. My men did not see it placed because of the many curves in the street."

For a short while there were only breathing sounds in the car.

The car came to a slightly wider highway and moved more swiftly. Presently Ghalil went on:

"I was saying, Mr. Mannard, that when Mr. Coghlan writes the memorandum we showed him yesterday, he will wish things to happen exactly as they will have happened. For that reason he will not be explicit in his message. He will not mention rifleshots or bombs, times or locales. Knowing this, I trust that you will survive until the affair is concluded. I am making every effort to bring it about."

Coghlan found his voice. He said savagely:

"But you can't risk lives on crazy reasoning like that!"

"I am taking every sane precaution," Ghalil said tiredly. "Among them, I shall ask you to remain at the Hotel Petra tonight, with my men guarding you as well as Mr. Mannard and Miss Mannard."

"If there's any risk to her, I'm certainly staying!" growled Coghlan.

THE CAR emerged into still wider streets. There were more people about, now. Here, in the modern section, all lights were electric. Here were motion-picture theatres, and motor-cars, and people in wholly European dress instead of the compromises between Eastern and Western costume to be found in the poorer quarters. The Hotel Petra

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loomed up, impressively illuminated.

The police-car stopped before it. Ghalil got out and looked casually about him. A lounger, nearby, signalled inconspicuously. Ghalil nodded. The lounger moved away. Ghalil opened the car-door for the others to emerge.

"I impose myself upon you also," he said politely. "I shall stay on watch until affairs mature."

They entered the lobby, went toward the lift, only slightly reassured by bustle and bright lights. Coghlan said suddenly:

"Where's Duval? He's in this too!"

"He remains at 80 Hosain," said Ghalil briefly. "Poor man! He is wedded to logic and in love with the past. He is sorely tempted to a crime of passion! But I have left men with him."

They crowded into the lift. It rose. There was a man polishing woodwork in the hall outside Mannard's suite. He looked like an hotel employee, but nodded to Lieutenant Ghalil.

"One of my men," the Turk said. "All is well so far. There are other guards."

They went into the suite. Mannard looked definitely grim.

"I'm going to order something to eat," he told Ghalil. "It's nearly ten o'clock, and we all missed dinner. But we're going to get this thing thrashed out! I want some straight talk! If that's the truth about somebody leaving a bomb on the street—and if gadgets have ghosts—"

He was in a state of mind in which consecutive thought was not easy. There were too many inexplicables, too many tag ends of fact. From Coghlan's tale of an impossible book with an impossible message—which Mannard had seen now—to a preposterous shot smashing a coffee-cup to keep him from drinking an incredibly poisoned drink, and to a physical phenomenom of frost without refrigeration and a look of silvery metal which was not matter . . .

Mannard was an engineer. He was hard-headed. He was prepared to face anything which was fact, and worry about theory afterward. But he was not able to adjust to so many facts at once, each of them contradicting any reasonable theory. He looked at once irritable and dogged and a little frightened.

"When I try to think this thing over, I don't believe even what I tell myself!" he said angrily. "Things happen, and I believe 'em while they're happening, but they don't make any damned sense afterward!"

He stamped out of the room. They heard him telephoning an order for dinner for four sent up to the suite at once. Then he snapped: "Yes, that's all. What? Yes, she's in—who wants her? Who? Oh. Send him on up."

He came back. "What the hell does Appolonius want to see you for, Laurie? He was downstairs asking if you'd see him when I phoned. He's coming up." Then he went back to his former subject, still fuming. "I tell you, there's something wrong about the whole approach to this business! It seems that somebody is trying to kill me. I don't know why they should, but if they really want to it ought to be a simple enough job! It shouldn't call for all these trimmings! Nobody would set out to kill somebody and add in a seven-hundred-year-old book and a forgery of Tommy's fingerprints and a gadget's ghost and all the rest! Not if a plain, ordinary murder was back of it—or a swindle either! So what in—"

The buzzer at the door of the suite. Coghlan went to answer it.

APPOLONIUS the Great started visibly when he saw Coghlan. He said with great dignity:

"I had a note from Miss Mannard. She asked me to befriend her in this tragic time—"

Mannard's voice came from behind Coghlan.

"Dammit, we've got to look for a simple scheme! A simple purpose! There's a mix-up here! We're linking things that just don't belong together!"

Appolonius gasped.

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"That is—Mr. Mannard!"

"Why not?" said Coghlan.

There was a chattering sound. The teeth of Appolonius the Great seemed to be its source. He leaned against the door.

"Pardon! Let me recover myself! I do not wish to be faint. This is—incredible!"

Coghlan waited. The small fat man's face was in shadow. He took several deep breaths.

"I—think I can act naturally now."

Coghlan closed the door behind him. And Appolonius walked into the sitting-room of the suite with his usual strutting waddle—but his usual beaming smile simply could not jell. He bowed elaborately to Mannard and to Laurie, with sweat shining on his face. Mannard said:

"Appolonius, this is Lieutenant Ghalil of the police. He thinks I'm in some danger."

Appolonius the Great swallowed. He said to Mannard:

"I came because I thought you were dead."

A rather thoughtful silence followed. Then Lieutenant Ghalil cleared his throat to ask the obvious questions—and paused, looking exceeding alert, as Appolonius' pudgy right hand went into his coat pocket—

Only an envelope came out. A Hotel Petra envelope. His fat fingers shaking, Appolonius drew out the single sheet it enclosed and handed it to Mannard. Mannard read. He flushed, speechless with anger. He handed it to Ghalil.

Ghalil read, and said slowly:

"But the letter is dated—tomorrow!" He passed it politely to Laurie. "I do not think you wrote this, Miss Mannard."

He returned his gaze to the shaken, uneasy, almost trembling figure of that small magician who called himself Appolonius the Great.

Coghlan moved to be beside Laurie as she read. Her shoulder touched his. The note said:

"Dear Mr. Appolonius;

You are the only person I know in Istanbul to ask for help in the tragic circumstances of my father's death. Will you help me, please?

Laurie Mannard."

"I have heard of post-dated checks," said Ghalil. "I think that is an American custom. But pre-written letters . . ."

Appolonius seemed to shiver.

"I—did not notice that," he said unsteadily. "But it—would seem to be like the message of which Mr. Coghlan told us—with his fingerprints."

"Not quite," said Ghalil, shaking his head. "No, not quite!"

Mannard said furiously: "Where'd you get this, Appolonius? It's a forgery, of course. I'm not dead yet!"

"I had been—away from my hotel. I returned and that—letter awaited me. I came here at once."

"It is dated norrow," Ghalil pointed out. "Which could be an error of timing, or a confusion in time itself. But I do not think so. Certainly it seems to imply, Mr. Mannard, that you are to die tonight, or surely tomorrow morning. But on the other hand, Mr. Coghlan will not write with certainty of your death when he does write in that book. So there is hope—"

"I have no intention of dying tonight," said Mannard angrily. "No intention at all!"

"Nor," said Lieutenant Ghalil, "have I any intention of forwarding such a project. But I can think of no precautions that are not already in force."

Appolonius sat down abruptly, as if his knees had given way beneath him. His sudden movement drew all eyes.

"Has something occurred to you?" asked Ghalil mildly.

Appolonius shivered. "It—occurs to me—" he paused to moisten his lips—"to tell of my visit with Mr. Coghlan today. I—accused him of mystification.

"He admitted that there *was* a conspiracy. He—offered to admit me to it. I—I now accuse Mr. Coghlan of designing to murder Mr. Mannard!"

The lights went out. There was dead

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blackness in the room.

Instantly there was an impact of body against body. Then groaning, gasping breaths in the darkness. Men struggled and strained. There were thumpings. Laurie cried out.

Then Ghalil's voice panted, as if his breathing were much impeded:

"You—happen to be strangling me, Mr. Coghlan! I think that I am—strangling him! If we can only hold him until the lights—he is very strong—"

The struggle went on in the darkness on the floor.

VII

THERE was a frantic scratching of a pass-key in the door to the suite. Flashlight beams licked in the opening. Men rushed in, their lights concentrating on the squirming heap of bodies on the floor. Mannard stood embattled before Laurie, ready to fight all comers.

The men with flashlights rushed past him, threw themselves upon the struggle.

They had Appolonius the Great on his feet, still fighting like a maniac, when the lights flashed back into brightness as silently and unreasonably as they had gone out.

Coghlan stood back, his coat torn, a deep scratch on his face. Lieutenant Ghalil bent down and began to search the floor. After a moment he found what he looked for. He straightened with a crooked Kurdish knife in his hand. He spoke in Turkish to the uniformed police, against whom fat little Appolonius still struggled in feverish silence. They marched him out. He still jumped and writhed, like a suitful of fleshy balloons.

Ghalil held out the knife to Coghlan. "Yours?"

Coghlan was panting. "Yes— I use it as a letter-opener on my desk. How'd it get here?"

"I suspect," said Ghalil, "that Appolonius picked it up when he visited you today."

He began to brush off his uniform. He still breathed hard.

Mannard said indignantly, "I don't get this! Did Appolonius try to kill me? In Heaven's name why? What would he get out of it?"

Ghalil finished the brushing process. He said with a sigh:

"When M. Duval first brought me that incredible book, I put routine police inquiries through on everyone who might be involved. You, Mr. Mannard. Mr. Coghlan. Of course M. Duval himself. And even Appolonius the Great. The last information about him came only today. It appears that in Rome, in Madrid, and in Paris he has been the close friend of three several rich men of whom one died in an automobile accident, one apparently of a heart attack, and one seemed to have committed suicide. It is no coincidence, I imagine, that each had given Appolonius a large check for his alleged countrymen only a few days before his death. I think that is the answer, Mr. Mannard."

"But I've given him no money!" protested Mannard blankly. "He did say he'd gotten money, of course, but—" and suddenly he stopped short. "Damnation! A forged check going through the clearing-house! It had to be deposited while I was alive! And I had to be dead before it was cleared, or I'd say it was a forgery! If I was dead, it wouldn't be questioned—"

"Just so," said Ghalil. "Unfortunately, the banks have not had time to look through their records. I expect that information tomorrow."

Laurie put her hand on Coghlan's arm. Mannard said abruptly:

"You moved fast, Tommy! You and the lieutenant together. How'd you know to jump him when the lights went out?"

"I didn't know," admitted Coghlan. "But I saw him looking at that wristwatch of his, with the second-hand sweeping around. He showed me a trick today, at my apartment, that depended

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on his knowing to a split-second when something was going to happen. I was just thinking that if he'd been expecting the lights to go out last night, he could have been triggered to throw you down-stairs. Then the lights went out here—and I jumped."

"It was desperation," Ghalil interposed. "He has tried four several times to assassinate you, Mr. Mannard."

"You said something like that—"

"You have been under guard," admitted Ghalil, "since the moment M. Duval showed me that book with the strange record in it. You had rented an automobile. My men found a newly contrived defect in its muffler, so that deadly carbon-monoxide poured into the back of it. It was remedied. A bomb was mailed to you, and reached you day before yesterday—before I first spoke to Mr. Coghlan. It was—" he smiled apologetically—"intercepted. Today he tried to poison you at the Sea of Marmora. That failed by means he did not understand or like it. Moreover, he was frightened by the affair of the book. He considered that another conspiracy existed, competing with his. The mystery of it, and the unexplained failure of attempts to assassinate you, drove him almost to madness. When even the bomb failed to blow up my police-car—"

"Suppose," said Mannard grimly, "just suppose you explain that book hocus-pocus you and Duval are trying to put over!"

"I cannot explain it," said Ghalil gently. "I do not understand it. But I think Mr. Coghlan proceeds admirably—"

The door to the suite buzzed. Ghalil admitted a waiter carrying a huge tray. The waiter said something in Turkish and placed the tray on a table. He went out.

"A man was caught in the basement with a sweep-second wrist-watch," said Ghalil. "He had turned off the lights and turned them on again. He is badly frightened. He will talk."

LAURIE looked at Coghlan. Then, trembling a little, she began to uncover dishes on the tray.

Mannard roared: "But what the hell's that book business, and Tommy's fingerprints, and the stuff on the wall? They're all part of the same thing!"

"No," said the Turk. "You make the mistake I did, Mr. Mannard. You assumed that things which are associated with the same thing are connected with each other. But it is not true. Sometimes they are merely apparently associated—by chance."

Laurie said, "Tommy, I—think we'd better eat something."

"But do you mean," demanded Mannard, "that it's not hocus-pocus? Do you expect me to believe that there's a gadget that's got a ghost? D'you mean that Tommy Coghlan is going to put his fingerprints under a memorandum that says I'm going to be killed? That he's going to *write* it?"

"No," admitted Ghalil. "Still, that unbelievable message is the reason I set men to guard you three days ago. It is the reason you are now alive." He looked hungrily at the uncovered dishes. "I starve," he confessed. "May I?"

Mannard said, "It's too crazy! It'd be like a miracle! Confusion in time so there'd be all this mix-up to save my life? Nonsense! The laws of nature don't get suspended—"

Coghlan said thoughtfully, "When you think of it, sir, that field of force isn't a plane surface. It's like a tube—the way a bubble can be stretched out. That's what threw me off. When you think what a magnetic field does to polarized light—"

"Consider me thinking of it," growled Mannard. "What of it?"

"I can duplicate that field," said Coghlan thoughtfully. "It'll take a little puttering around, and I can't make a tube of it, but I can make a field that will absorb energy—or heat—and yield it as power. I can make a refrigeration gadget that will absorb heat and yield power. It'll take some research . . ."

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"Sure of that?" snapped Mannard.

Coghlan nodded. He was sure. He'd seen something happen. He'd figured out part of how it happened. Now he could do things the original makers of the gadget couldn't do. It was not an unprecendented event, of course. A spectacle-maker in Holland once put two lenses together and made a telescope which magnified things but showed them unhappily upside down. And half a continent away, in Italy, one Galileo Galilei heard a rumor of the feat and sat up all night thinking it out—and next morning made a telescope so much better than the rumored one that all field-glasses are made after his design to this day.

"I'll back the research," said Mannard shrewdly. "If you'll make a contract with me. I'll play fair. That's good stuff!"

He looked at his daughter. Her face was blank. Then her eyes brightened. She smiled at her father. He smiled back.

She said, "Tommy—if you can do that—oh, don't you *see*? Come in the other room for a moment. I want to talk to you!"

He blinked at her. Then his shoulders straightened. He took a deep breath, muttered four words, and said, "Hah!" He grabbed her arm and led her through the door.

Mannard said satisfiedly: "That's sense! Refrigeration that yields energy! Power from the tropics! Running factories from the heat of the Gulf Stream!"

"But," said Ghalil, "does not that sound as improbable as that a gadget should have a ghost?"

"No," said Mannard firmly. "That's science! I don't understand it, but it's science! And Laurie wants to marry him, besides. And anyhow, I know the boy! He'll manage it!"

The telephone rang. It rang again. They heard Coghlan answer it. He called:

"Lieutenant! For you!"

Ghalil answered the telephone. He pointedly did not observe the new, masterful, confident air worn by Coghlan, or the distinctly radiant expression on Laurie's face. He talked, in Turkish. He hung up.

"I go back to 80 Hosain," he said briefly. "Something has happened. Poor M. Duval grew hysterical. They had to send for a physician. They do not know what occurred—but there are *changes* in the room."

"I'm coming with you!" said Coghlan instantly.

LAURIE would not be left behind. Mannard expansively came too. The four of them piled again into the police-car and headed back for the squalid quarter of the city in which the room with the gadget's ghost was to be found. Laurie sat next to Coghlan, and the atmosphere about them was markedly rosy. Ghalil watched streets and buildings rush toward them, the ways grow narrower and darker and the houses seemed to loom above the racing car. Once he said meditatively:

"That Appolonius thought of everything! It was so desperately necessary to kill you, Mr. Mannard, that he had even an excuse for calling on you to murder you, though he expected a street-bomb to make it unnecessary! It must be time for his forged check to appear at your bank! That letter was a clever excuse, too. It would throw all suspicion upon the engineers of the mystery of the ancient book."

Mannard grunted. "What's happened where we're going? What sort of changes in the room?" Then he said suspiciously: "No occult stuff?"

"I doubt it very much," said Ghalil.

There was another car parked in the narrow lane. The police at the house had gotten a doctor, who was evidently still in the building.

They went up into the room on the second floor. There were three policemen here, with a grave, mustachioed civilian who had the consequential air

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of the physician in a European—or Asiatic—country. Duval lay on a canvas cot, evidently provided for the police who occupied the building now. He slept heavily. His face was ravaged. His collar was torn open at his throat, as if in a frenzy of agitation when he felt that madness came upon him. His hands were bandaged. The physician explained at length to Ghalil, in Turkish. Ghalil then asked questions of the police. There was a portable electric lantern on the floor, now. It lighted the room acceptably.

Coghlan's eyes swept about the place. Changes? No change except the cot . . . No! There had been books here beside Duval, on the floor. Ghalil had said they were histories in which Duval tried to find some reference to the building itself. There were still a few of those books—half a dozen, perhaps, out of three or four times as many. The rest had vanished.

But in their place were other things.

Coghlan was staring at them when Ghalil explained:

"The police heard him making strange sounds. They came in and he was agitated to incoherence. His hands were frost-bitten. He held the magnet against the appearance of silver and thrust books into it, shouting the while. The books he thrust into the silvery film vanished. He does not speak Turkish, but one of them thought he was shouting at the wall in Greek. They subdued him and brought a physician. He was so agitated that the physician gave him an injection to quiet him."

Coghlan said: "Damn!"

He bent over the objects on the floor. There was an ivory stylus and a clumsy reed pen and an ink-pot—the ink was just beginning to thaw from solid ice—and a sheet of parchment with fresh writing upon it. The writing was the same cursive hand as the memo mentioning "frigid Beyond" and "adepts" and "Appolonius" in the old, old book with Coghlan's fingerprints. There was a leather belt with a beautifully worked buckle. There was a dagger with an ivory handle. There were three books. All were quite new, but they were not modern printed books: they were manuscript books, written in graceless Middle Greek with no spaces between words or punctuation or paragraphing. In binding and make-up they were exactly like the *Alexiad* of seven hundred years ago. Only—they were spanking new.

Coghlan picked up one of them. It was the *Alexiad*. It was an exact duplicate of the one containing his prints, to the minutest detail of carving in the ivory medallions with which the leather cover was inset. It was the specifically same volume—

But it was seven-hundred years younger—

And it was bitterly, bitterly cold.

DUVAL was more than asleep. He was unconscious. In the physician's opinion he had been so near madness that he had had to be quieted. And he was quieted. Definitely.

Coghlan picked up the alnico magnet. He moved toward the wall and held the magnet near the wet spot. The silvery appearance sprang into being. He swept the magnet back and forth. He said:

"The doctor couldn't rouse Duval, could he? So he could write something for me in Byzantine Greek?"

He added, with a sort of quiet bitterness. "The thing is shrinking—naturally!"

It was true. The wet spot was no longer square. It had drawn in upon itself so that it was now an irregular oval, a foot across at its longest, perhaps eight inches at its narrowest.

"Give me something solid," commanded Coghlan. "A flashlight will do."

Laurie handed him Lieutenant Ghalil's flashlight. He turned it on—it burned only feebly—and pressed it close to the silvery surface. He pushed the flashlight into contact. Into the silvery sheen. Its end disappeared. He pushed it through the silver film into what should have been solid plaster and

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stone. But it went. Then he exclaimed suddenly and jerked his hand away. The flashlight fell through—into the plaster. Coghlan rubbed his free hand vigorously on his trouser-leg. His fingers were numb with cold. The flashlight had been metal, and a good conductor of frigidity.

"I need Duval awake!" said Coghlan angrily. "He's the only one who can write that Middle Greek—or talk it or understand it! I need him awake!"

The physician shook his head when Ghalil relayed the demand.

"He required much sedative to quiet him," said Ghalil. "He cannot be roused. It would take hours, in any case."

"I'd like to ask them," said Coghlan bitterly, "what they did to a mirror that would make its surface produce a ghost of itself. It must have been something utterly silly!"

He paced up and down, clenching and unclenching his hands.

"To make a gadget Duval called a 'magic mirror'" —his tone was sarcastic— "they might try diamond-dust or donkey-dung or a whale's eyelashes. And one of them might work! Somebody did get this gadget, by accident we can't hope to repeat!"

"Why not?"

"We can't think, any more, like lunatics or barbarians or Byzantine alchemists!" snapped Coghlan. "We just can't! It's like a telephone! Useless by itself. You have to have two telephones in two places at the same time. We can see that. To use a thing like this, you have to have two instruments in the same place at different times! With telephones you need a connection of wire, joining them. With this gadget you need a connection of place, joining the times!"

"A singularly convincing fantasy," said Ghalil, his eyes admiring. "And just as you can detect the wire between two telephone instruments—"

"—You can detect the place where gadgets are connected in different times! The connection is cold. It condenses moisture. Heat goes into it and disappears. And I know," said Coghlan defiantly, "that I am talking nonsense! But I also know how to make a connection which will create cold, though I haven't the ghost—*hah*, damn it!—of an idea how to make the instruments it could connect! And making the connection is as far from making the gadgets as drawing a copper wire is from making a telephone exchange! All I know is that an alnico magnet will act as one instrument, so that the connection can exist!"

Mannard growled: "What the hell is all this? Stick to facts! What happened to Duval?"

"Tomorrow," said Coghlan in angry calm, "he's going to tell us that he heard faint voices through the silvery film when he played with the magnet. He's going to say the voices were talking in Byzantine Greek. He's going to say he tried to rap on the silver stuff—it looked solid—to attract their attention. And whatever he rapped with went through! He'll say he heard them exclaim, and that he got excited and told them who he was—maybe he'll ask them if they were working with Appolonius, because Appolonius was mentioned on the flyleaf of that book—and offer to swap them books and information about modern times for what they could tell and give him! He'll swear he jammed books through—mostly history-books in modern Greek and French—and they shoved things back. His frost-bitten hands are the evidence for that! When something comes out of that film or goes into it, it gets cold! The 'frigid Beyond'! He'll tell us that the ghost of the gadget began to get smaller as he swapped—the coating or whatever produced the effect would wear terrifically with use!— and he got frantic to learn all he could, and then your policemen came in and grabbed him, and then he went more frantic because he partly believed and partly didn't and couldn't make them understand. Then the doctor came and everything's

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messed up!"

"You believe that?" demanded Mannard.

"I know damned well," raged Coghlan, "he wouldn't have asked them what they did to the mirror to make it work! And the usable surface is getting smaller every minute, and I can't slip a written note through telling them to run down the process because Duval's the only one here who could ask a simple question for the crazy answer they'd give!"

HE ALMOST wrung his hands. Laurie picked up the huge, five-inch-thick book that had startled him before. Mannard stood four-square, doggedly unbelieving. Ghalil looked at nothing, with bright eyes, as if savoring a thought which explained much that had puzzled him.

"I'll never believe it," said Mannard doggedly. "Never in a million years! Even if it could happen, why should it here and now? What's the purpose—the real purpose in the nature of things? To keep me from getting killed? That's all it's done! I'm not that important, for natural laws to be suspended and the one thing that could never happen again to happen just to keep Appolonius from murdering me!"

Then Ghalil nodded his head. He looked approvingly at Mannard.

"An honest man!" he said. "I can answer it, Mr. Mannard. Duval had his history-books here. Some were modern Greek and some were French. And if the preposterous is true, and Mr. Coghlan has described the fact, then the man who made this—this 'gadget' back in the thirteenth century was an alchemist and a scholar who believed implicitly in magic. When Duval offered to trade books, would he not agree without question because of his belief in magic? He would have no doubts! What Duval sent him would seem to him magic. It would seem prophecy, —in flimsy magic form, less durable than sheepskin—but magic nonetheless. He could even fumble at the meaning of the Greek. It would be peculiar—but magic. He could read it as 'perhaps' a modern English-speaking person can read Chaucer. Not clearly, and fumblingly, but grasping the meaning dimly. And this ancient alchemist would believe what he read! It would seem to him pure prophecy. And he would be right!"

Ghalil's expression was triumphant.

"Consider! He would have not only past history but future history in his hands! He would use the information! His prophecies would be right! Perhaps he could even grasp a little of the French! And what happens when superstitious men find that a soothsayer is invariably right? They guide themselves by him! He would grow rich! He would grow powerful! His sons would be noblemen, and they would inherit his secret knowledge of the future! Always they would know what was next to come in the history of Byzantium and—perhaps even elsewhere! And men, knowing their correctness, would be guided by them! They would make the prophecies come to pass! Perhaps Nostradamus compiled his rhymes after spelling through a crumbling book of paper—they had no paper in Byzantium or later in Europe itself! —and startlingly foretold the facts narrated in a book our friend Duval sent back to ancient Istanbul!"

Then Ghalil sat down on the foot of the cot, almost calmly.

"Knowledge of the future, in a superstitious age, would make the future. This event, Mr. Mannard, did not come about to save your life, but to direct the history of the world through the Dark Ages to the coming of today. And that is surely significant enough to justify what has happened!"

Mannard shook his head.

"You're saying now," he said flatly, "that if Tommy doesn't write down what you showed me, all this won't happen because Duval won't find the writing. If he doesn't find the writing, the books

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won't go back to the past. All history will be different. My great-grandfather and yours, maybe, will never be born and we won't be here. No! That's nonsense!"

Coghlan looked at the book in Laurie's hand. He took it from her. "This is exactly like Duval's book," he said.

"It is the same book," said Ghalil, with confidence. "And I think you know what you will do."

"I'm not sure," said Coghlan. He frowned. "I don't know."

Laurie said urgently:

"If it isn't nonsense, Tommy, then—I could not be at all, and you could not be at all . . . we'd never meet each other, and you wouldn't have that research to do—and—and—"

There was silence. Coghlan looked around on the floor. He picked up the reed pen. He said, unnecessarily:

"I still don't believe this."

But he dipped the pen in the thawing ink of the ink-pot. Laurie steadied the book for him to write. He wrote:

See Thomas Coghlan, 750 Fatima, Istanbul.

He looked at her and hesitated. Then he said:

"There was something I'd say to myself . . . written down here, it was what made me believe in it enough to trail along." He wrote:

Professor, president, so what?

Ghalil said mildly: "I am sure you remember this address."

"Yes," said Coghlan seriously. He wrote:

Gadget at 80 Hosain, second floor, back room.

Mannard said grimly:
"It's still nonsense!"
Coghlan wrote:

Make sure of Mannard. To be killed.

"That's a slight exaggeration," he observed slowly, but it's necessary, to make us act as we did."

He was smudging ink on his fingers when Ghalil said politely:

"May I help? The professional touch—"

Coghlan let him smear the smudgy black ink on his fingertips. Ghalil painstakingly rolled the four-finger-prints, the thumb-print below. He said calmly:

"This is unique—to make a fingerprint record I will see again when it is seven centuries old! Now what?"

Coghlan picked up the magnet. It was much brighter than a steel one. It had the shine of aluminum, but it was heavy. He presented it to the dwindling wet spot on the wall. The wet place turned silvery. Coghlan thrust the book at the shining surface. It touched. It went into the silver. It vanished. Coghlan took the magnet away. The wet place looked, somehow, as if it were about to dry permanently. Duval breathed stertoriously on the canvas cot.

"And now," said Ghalil blandly, "we do not need to believe it any more. We do not believe it, do we?"

"Of course not!" growled Mannard. "It's all nonsense!"

Ghalil grinned. He brushed off his fingers.

"Undoubtedly," he said sedately, "M. Duval contrived it all. He will never admit it. He will always insist that one of us contrived it. We will all suspect each other, for always. There will be no record anywhere except a very discreet report in the archives of the Istanbul Police Department, which will assign the mystification either to M. Duval or to Appolonius the Great—after he has gone to prison, at least. It is a singular mystery, is it not?"

He laughed.

A week later, Laurie triumphantly pointed out to Coghlan that it was demonstrably all nonsense. The cut on his thumb had healed quite neatly, leaving no scar at all.

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By WALLACE UMPHREY

PAPA Knows Best

—and he's ready to tell the world

THE morning telecast had told of more deaths, some natural but most of them suicides. It wasn't news calculated to set at rest the human spirit; but then, since the day disaster had struck, there had been no such thing as a peaceful mind.

It was so easy to remember how it all began, Steve Rushton was thinking, as he suffered the indignity of the routine search. The trick was in trying to forget. You rationalized your fears and anxieties; you slammed the door against an impossible enemy and then pretended he was gone. Out of sight, out of mind. And if that didn't work—kill yourself.

This is how it was: one day the grass was green and the trees were sending out new leaf buds; a day later the grass was withering and turning yellow, and the tender new leaf buds were starting to drop off the trees.

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Hysteria reigned, recrimination following recrimination. A well-known gossip columnist swore it was a ghastly plot by the Eastern Alliance to rule the world—overlooking the fact that the Eastern Alliance was no better off. A cultist with a large following in California brayed that mankind was reaping the fruit of its own evil. Some people tried to look into their own hearts and others tried to look into the future, and as a result death by suicide mounted in a dizzy spiral.

World leaders pleaded for sanity. Scientists sought feverishly for an answer, and finally agreed that what had happened was due to a ray which was coming from somewhere out in interplanetary space. And the enormity of the peril was fully realized when farmers reported their crops were failing. All known stockpiles of food could support mankind for only a limited time.

At first science tried to devise some sort of barrier against the ray, but this was soon given up; nothing about the ray seemed to fit into any pigeon-hole of human knowledge. Next science turned its attention to the manufacture of synthetic food. And when this became an accomplished fact, almost overnight, the world heaved a sigh of relief.

But the relief was short-lived. Mankind was suddenly finding it harder and harder to breathe. The secondary effect of the destruction of plant life was becoming all too apparent.

So again the world looked toward Papa. Papa had saved mankind once. Now Papa would have to do it again....

STEVE RUSHTON, except for a bad moment now and then, was relatively free of fear and anxiety. He had a complete and abiding faith, amounting to a childlike worship, in Papa's infallible ability to get the world out of the horrible mess it was in. Papa had showed them how to synthesize carbon and hydrogen for food. Now Papa had to show them how to make the air once more fit to breathe.

The routine search didn't take long. An electric eye, a geiger counter, and sundry other gadgetry turned Steve upside down and inside out and found him clean. The security guard relaxed a little and said, "Okay, Steve. You can see Papa now. And don't do anything in there I wouldn't do."

Steve grinned politely and the guard, slapping a thigh, laughed with maudlin abandon—and then suddenly began to wheeze. "This damned air—" he gasped.

"What do you expect for free—" Steve asked sourly—"pure oxygen?"

"It's getting worse."

"Papa will find a way."

The guard shook his head. "I don't get it."

Steve snapped his fingers. "It's simple. We breathe in oxygen and exhale carbon dioxide. Plant life takes the carbon out of the CO_2 in the air and replaces it with oxygen. Now, with all plant life dead, we're using up the oxygen and it's not being replaced."

"Well—" the guard began.

"Trust Papa," Steve said. "Papa knows best."

"Sure," said the guard uncertainly. "Oh, sure."

Steve ducked through the open door. A small overhead light winked from red to green and the door locked securely behind him. For the next eight hours Steve would be a prisoner—more tightly locked up than if he were in a jail cell.

"What a guy will do," Steve muttered aloud, "for a lousy two hundred credits a week." But he didn't really mind being locked up alone in the room. Steve loved Papa.

Luckily his love for Papa was different from his love for Janey Weeks, who worked the swing shift. Perhaps it was just as well, for otherwise it would have looked bad on his monthly psycho report. A man might love a maid but never, never a machine.

And Papa, of course, didn't return his affection. Papa was wholly unencumbered by emotion, and therefore completely logical. Papa never rationalized.

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All Papa knew about emotion—fear, love, jealousy, hatred, greed, and all the rest—was what Steve had helped teach him. Papa never forgot anything, and the more he was able to learn the more answers he could come up with. And from the standpoint of logic his answers were never wrong.

Sometimes Papa's emotionless approach bothered Steve. It seemed to Steve that Papa was all the time laughing at the frailties of human nature. Mostly Steve didn't let himself think about it.

PAPA'S real name was Kleinschmidt IV, after the name of the inventor. Papa was really a superior computing machine, a whizz of a cybernetics brain, covering about an acre of floor space; he was made out of electronic tubes and relays and switches and dials and meters, the work encased in row after row of gleaming steel cabinets—all in all worth considerably more than the credit-and-a-half value of the normal human chemistry.

Steve patted one of Papa's gleaming panels. "Lover boy," he said.

He took off his hat and coat, rolled up his sleeves and then pushed a button. Papa began to glow. However, Papa was always sluggish after a night's rest and it took him quite a while every morning to get his memory working.

"Well, Papa," Steve said, "how about a cup of coffee?"

Papa didn't answer; Papa hadn't waked up yet. And besides, Papa didn't drink coffee.

Steve went to a small kitchen alcove and deftly brewed a pot of coffee. He moved slowly, trying not to exert himself; it was now highly important to keep your oxygen consumption at a minimum.

The coffee supply was almost gone and there was no more where it had come from. Well, it had been nice while it lasted. Steve turned his thoughts to something more pleasant—Janey Weeks.

Both Steve and Janey had been with Papa ever since the very beginning. Papa was two years old now, but much wiser than his years might indicate. Steve and Janey both had Ph.D.'s in Semantics, a basic requirement for their jobs. Papa demanded accurate communication for otherwise he'd come up with one of his favorite phrases: things like "observation fallacious" and "insufficient data."

Steve poured himself a cup of coffee and then sat down at the desk in front of Papa. He took a sip of coffee and said, "How are you today, Papa?"

"Fine," Papa intoned through his loudspeaker. "It's good to be awake."

It still bothered Steve to hear Papa speak, although he was getting used to it. You could get used to about anything—except not eating and not breathing.

Papa had originally been designed to take a punched tape and reply on a ribbon fed from a large spool somewhere inside him; the audio and speech channels had been a later refinement. This had come after Dr. Kleinschmidt had killed himself, first going quietly insane like the inventor of the linotype machine of an earlier era.

And the innovation had been Papa's own idea. Another of his own ideas was the power plant which fed and nourished him, and which operated totally without human control. He'd come up with still others. The idea that Papa could refine himself had scared Janey, but Steve had accepted it—just as he blindly accepted everything Papa said and did.

Steve finished his coffee and then jerked a wire basket to him. A sheaf of papers lay waiting, having been delivered by a pneumatic tube from another part of the building. The papers were covered with a vast array of numbers which Steve didn't understand and didn't even want to. Steve was a semanticist; not trained in the physical sciences.

"Look alert, Papa," Steve said. "Here it comes."

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Papa remained silent, waiting. One thing about Papa—he spoke no unnecessary words.

Steve carefully read off the data from the sheaf of papers, enunciating clearly so that Papa wouldn't misunderstand. It took a long time, and Steve's throat was dry when he finally finished. He heated up the coffee again, since it sometimes took Papa quite a spell to digest a meal.

It was almost noon when Papa finally spoke again.

STEVE scowled and picked up a phone and was connected with the Office of Information upstairs, where scientific data was collected from every cranny of the globe and correlated and put into the proper form for Papa to digest.

A feminine voice answered, and Steve wished Security would allow him to see the voice's owner on a vision plate. On the spur of the moment Steve said, "How about a date?"

"Not with you, Frankenstein."

"Look. I only work here too."

"I don't want anything to do with either you or that unholy monster."

"Now you've hurt Papa's feelings."

"How—the voice suddenly faltered—"how can you talk this way?"

"I don't know," Steve said. "It's better than worrying."

"Maybe . . . Well, what's his answer this time?"

"Insufficient data."

"Damn! Ask him how insufficient the data is."

Steve chuckled. "Uh-uh. I've tried that. No dice. Data is either sufficient or it isn't. There's no such thing as a degree of insufficiency."

A sigh came over the wire. "If I lose faith in that monster, I might as well cut my throat. I'd rather do that than die of slow strangulation. Do you notice it's harder to breathe?"

"Yes. But don't forget. It was Papa who kept the whole human race from starving to death."

"I don't know. Maybe I'd just as soon starve as eat those damned pills."

"No, you wouldn't," Steve said. "Papa will save us now, too, just as soon as we feed him all the dope he has to know. Anything more to set before him now?"

"No," said the feminine voice, all banter gone. "Maybe on the next shift. I'm—I'm scared green."

"Tough," Steve said. "Well, better luck next time."

With distaste Steve swallowed a luncheon pill, feeling that the disaster had taken away most of the joy of living. Still, it was awfully nice just knowing you could stay alive—which was more than a lot of hapless people could say. When Papa had come up with the ways and means of making synthetic food, all the production facilities of the world had been turned to that end. Luckily most of the necessary equipment had been already in existence. But only slowly could the supply match the demand. And in the meantime a large segment of the total world population was starving.

Steve poured another cup of coffee. "You wastrel," he told himself. "You prodigal of nature." He sat down at his desk and gazed fondly at Papa, who was glowing silently. Papa would save them, Steve thought with childlike faith; Papa was infallible in his logic.

"Papa," Steve said. "When will Janey marry me?"

"Insufficient data," Papa said.

STEVE sighed, leaning back in his chair. A host of dark thoughts began churning around inside his head. It it was better to be doing something—anything. Even just talking to Papa would help him stop thinking. And Papa was nice to talk to. Papa seldom interrupted, and he never argued. Papa might disagree on a point of logic; but he never argued about it.

"Life's a struggle," Steve said. "It's always been that way, and it won't change. Quite a while ago a guy named Darwin put a label on it. The survival of the fittest. His theories have been

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discredited in some quarters, but that doesn't change his basic tenet. The weak die and the strong live."

Steve was getting warmed up. "Take the early reptiles. They couldn't keep up with geophysical change and they died off. All you have to do is follow historic evolution. Maybe man was an accident in the evolutionary process, but that's unimportant. What is important is this: man became top dog only because he happened to have hands with fingers on them. And man learned to adapt. That's probably the greatest single lesson man learned, although the result hasn't always been pretty. Man learned to kill off the weaker species, and after that he killed off the weaker races of men."

"You're cynical today," Papa said.

"Maybe this is one of my bitter days," Steve said. "No, it's not that. I'm just saying what everybody knows—but what we often hate to put into words because it doesn't sound nice. Take the new food pills. We all feel sorry for the people who haven't been able to get them; and yet every single one of us would fight tooth and nail to protect our own means of livelihood. Why do you think there have been riots? It's the haves against the have-nots."

"Is that the right attitude?"

"Rightness has nothing to do with it. It's the way the world was made. Still, we like to believe in man's immortality. So look here, Papa: When are we going to get some better air to breathe?"

Papa said, "No comment."

The door unlocked itself and Steve realized his day was about over. He stood up as Janey Weeks came in. She didn't look like a Doctor of Semantics—not if you were used to believing preconceived notions about how people were supposed to look.

Janey's smooth cheeks were flushed.

"What's the matter?" Steve asked.

"Those darned gadgets!" she said. "Every time I come to work I feel undressed."

"The gadgets aren't so dumb," Steve grinned. "A kiss for me today, sweetheart?"

Janey's flush deepened, and she didn't comply. "What on earth have you been telling Papa, Steve? Last night he suddenly asked me about love!"

Steve laughed. "How's everything outside?"

Janey shook her head. "It's horrible. More riots, more suicides. All the time it's getting harder to breathe. Steve, when will it end?"

"Trust Papa."

"I don't have your faith," Janey said wearily. "Surely Papa has been fed enough data to come up with something."

Steve took Janey in his arms, feeling her body pliant and soft against him. Then the security guard looked in to remind them that time was up. With tender compassion Steve kissed Janey on the lips.

"Janey, I'll pick you up after work."

"All right."

"You might at least act eager about it. We can look at the moon or something."

Janey smiled wanly. "It seems kind of silly, but maybe it's better than thinking."

A GYROCAR whirled Steve home. He stared out of the window, but he kept his mind firmly on Janey, partly so he wouldn't think of anything else. They passed the Park where Steve had first witnessed the disaster without fully realizing the final meaning. The grass was gone now and the bare trunks of the trees thrust upward, already bening to rot away. It was difficult to realize that never again would he see a growing thing.

He turned away, trying to throw the thought from his mind. The faces around him were wooden; and he knew he wasn't alone in his desire to be free of despair. Man. Man trying desperately to adapt.

Time passed slowly. His apartment bored him, but there was no place to go.

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He turned on the telescreen. More food riots. More deaths. Some of the deaths now, from mountain countries, were from lack of decent air. It was the same old struggle—the survival of the fittest. World leaders were begging for sanity. It seemed like an empty plea.

No. There was still Papa. Papa wouldn't let the human race die.

Steve grinned without mirth. Keep your chin up. Laugh at fears and anxieties. Kid around and be tough and act callous as hell. It was the only way to keep you from cutting your own throat.

A knock on the door. Steve ushered Johnny Carlyle in. Johnny was a brilliant physical chemist; it was he who, weeks ago, had put all known data into the correct form for Papa to digest. And Papa had come up with the formula for the food pills. "Hi, Johnny," Steve said. "How's tricks?"

Johnny flopped into a chair. "Lousy."

"No luck yet?"

"You ought to know."

"Look," Steve said. "Can't they stop the damned ray?"

"We've given up on that, Steve. We just can't fit it in with anything we know. It's a terrible emergency, and we haven't time to fool around. We've got to take a chance and pick out one angle and work on it." Johnny shifted wearily in the chair. "The angle we've picked is how to get the carbon dioxide out of the air and more oxygen into it. No existing equipment can do the job—at least so far as we're able to figure. Kleinschmidt IV is our only hope."

Steve nodded. "Where's the ray coming from?"

"We can pinpoint it, Steve. But that doesn't help. We're pretty sure it's not the effort of some alien race to conquer the earth. At least all our known logic precludes this idea. It's too indirect a method for conquest."

"Trust Papa."

"I don't know—" Johnny leaned suddenly forward. "For some odd reason he's beginning to scare me. He thinks too well—and without the checks and balances of emotion. I've got a feeling the lid is off."

Steve grinned.

"Go ahead and laugh!" Johnny grumbled. "Our problem now isn't much different than it was before. What I mean is this: the same data ought to show us how to beat the thing we face now. But all we get out of that cold-blooded thinking machine is the same old answer. Insufficient data!"

"There's a missing factor, Johnny."

"What?"

"That's for you physical scientists to figure out."

Johnny stood up. "Maybe you're right, Steve. Maybe the missing factor will show up tomorrow. Anyway, it better show up damned soon!"

LATER that night Steve picked up Janey. They went for a ride in the moonlight, but the whole thing wasn't too satisfactory. It was becoming increasingly difficult for Steve to keep the fear pushed out of his mind.

Janey began to cry.

"Cut it out!" Steve said. "Once you start that—you're lost. We've got to laugh in the teeth of danger. Man's always lived by faith. We've got to put our faith in Papa."

"But, Steve, I'm afraid of him."

"Nonsense," Steve told her sharply. "Nothing new tonight?"

"No. Information sent down a new set-up, but it still didn't work. Papa's beginning to sound like a stuck record." She hesitated a moment. "What on earth were you telling him today?"

"H'mmm?"

"He asked me about survival."

Steve laughed. "I'm guilty of being pretty juvenile sometimes. It was just whistling in the dark."

"Look at me, Steve," Janey said. "Suppose I was starving? Would you give me a food pill?"

Steve stopped laughing. "So that's what's bothering you! Janey, sure I would. What I meant was that it's hard to feel real sorrow for somebody so far

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away that you know you'll never see them or know them. It's always been that way. We read or hear of somebody dying, but we don't really feel it. It only means something when it's somebody close."

"I know," Janey whispered. "Steve, hold me close."

The next morning Steve didn't even switch on the telecast. Better not to see or hear any more about disaster. The air was worse now; it took Steve a long time to dress.

He went to work, trying to close his mind to everything that might magnify the fear. Fear was all around him now. Today had to be the day. Today Papa would find the answer.

The idea grew in his mind. He felt giddy. An odd notion came to him; he was a messiah. He was the instrument to save the world. He would communicate logically with Papa, Papa would tell him what the world had to know.

There wasn't even a security guard on duty; probably they were too sick to move or were even dead. Steve punched the button and Papa glowed and Steve sat down at the desk. The messiah idea clung. Steve knew it was stupid, but he was glad of the respite from fear.

He gave Papa time to warm up. A sheaf of papers lay waiting in the wire basket. The answer had to be there. He drew the basket toward him.

"No," Papa intoned, "The factors remain unchanged."

"What?"

"Survival of the fittest."

"We've got to have better air," Steve whispered. "You've got to give us the answer."

"Why?" Papa asked.

Steve felt his bones turn to jelly. He wished now that he'd never learned to rationalize, so that he could have died earlier by his own hand. Even before Papa spoke again, he knew what the words would be.

"I don't need air," Papa said.

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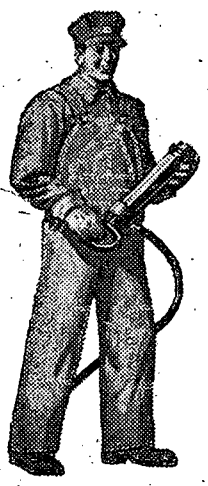

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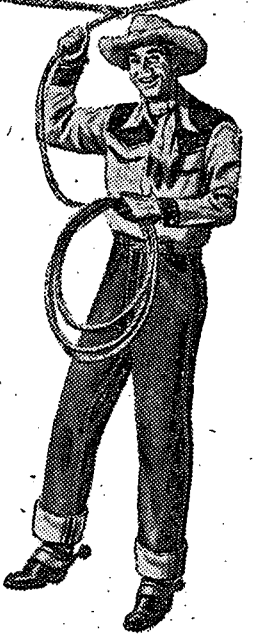

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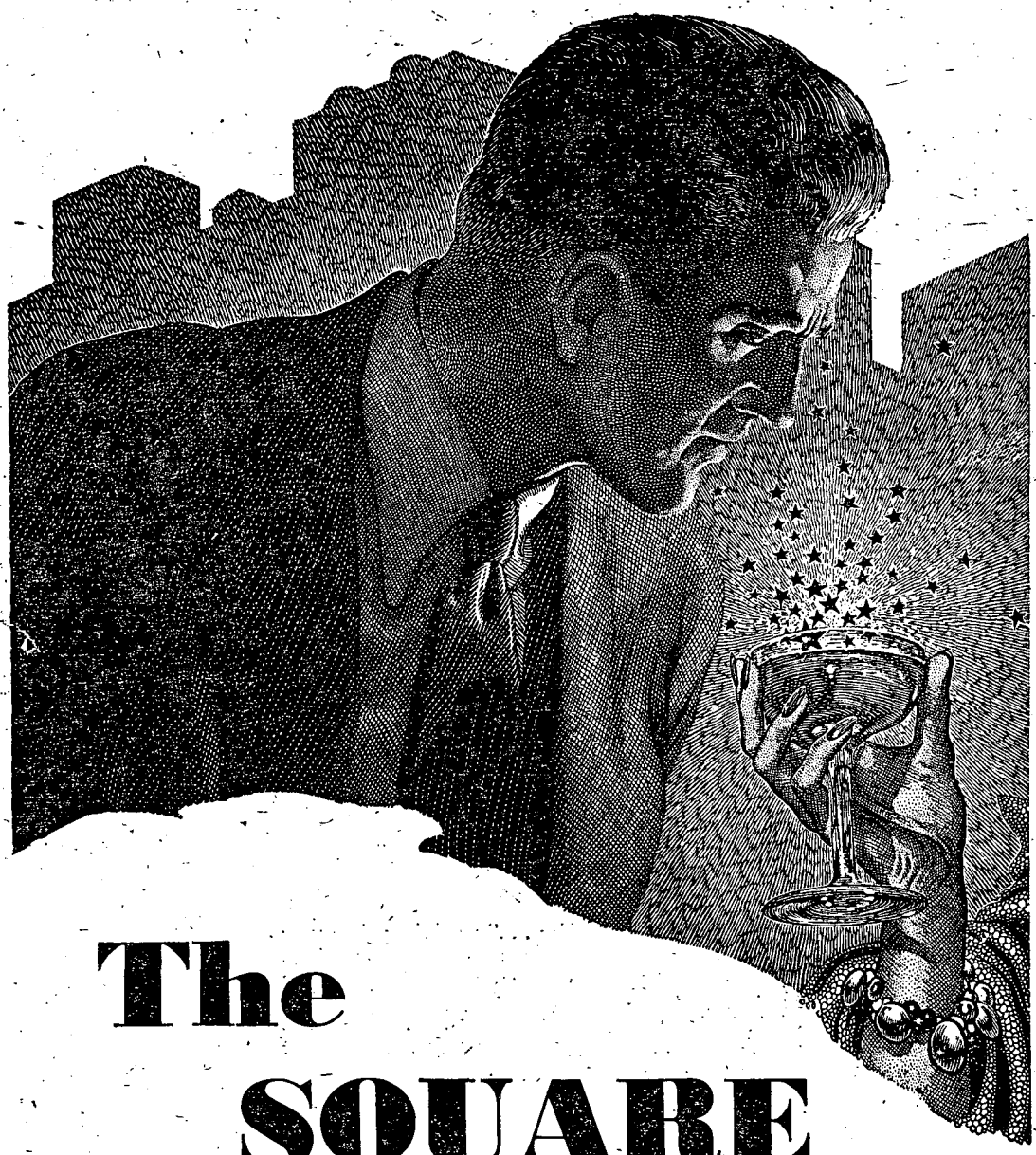

The SQUARE CUBE LAW

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The disappearance of three million dollars from the sealed rocket ship was a man-sized problem. But the answer was bigger than that!

A Novelet by FLETCHER PRATT

I

GEORGE HELMFLEET JONES said, "I've been wanting to meet you, sir, I suppose that in a certain sense you're my father-in-law. But you can understand how Angela—that is, Mrs. Jones—would feel a little nervous about coming back here."

He looked across the desk toward Dr. Runciman, head of the Braunholzer Research Institute, then across at his schoolmate, Richard Mansfeld, and finally tried a tentative smile in the direction of Dr. Betty Marie Taliaferro, the gorgeous blonde scientist who looked enough like his wife to be her twin sister. There was every reason why she should; Betty Marie Taliaferro was the mould, the original, from which Angela

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Jones had been born as a living duplicate, in the Runciman reproducer.

She didn't smile back, and neither did Runciman. Instead, the scientist said, "Yes. Yes. It would have been a pleasure. I understood your call was official, Mr. Jones." The smooth face within its frame of white hair looked a rebuke over the idea of allowing social amenities to break in on a busy working day.

Dick Mansfeld chuckled and said, "George, you want to remember that your status around here is just that of another government man. Since you were here two and a half years ago and found out about the reproducer, they've been showing up around the place, and every time one of them does it means more trouble. Isn't that right, Doctor?"

Runciman's face relaxed just enough to recognize the fact that his assistant for chemistry was on friendly terms with this intruder. "I fear so; I fear so," he said. "Nearly every department of the government wants us to reproduce something absolutely essential and at once. I really do not understand why they cannot consent to the construction of another reproducer unit. Besides which, my assistants and myself are subjected to a most annoying personal surveillance under the name of protection."

"It's slightly political," explained Jones. "Can you imagine what the economic effects of having any number of these reproducers in action would be? Neither can anybody else, and they don't dare take the chance. There's also the question of foreign countries. As long as there's only one reproducer and only you three people to watch, the government can be reasonably sure that the secret remains in this country. Remember what happened after the Russians got the formula for the atomic bomb?"

"I suppose so. I suppose so," said the doctor. Jones observed he liked to repeat himself, and Betty Marie stirred in her chair.

"All right," said Jones, "I'll explain why I'm here. I'm in the Secret Service."

"I have been informed of that," said Runciman, still a trifle frosty.

"Well, we've had a crime—by we, I mean the government. It isn't a crime the secret service would normally deal with, but there seems to be a linkage here, and as I worked here before on the Benson case, they decided to call this one a prima facie case of counterfeiting and assign me to it."

The three faces before him expressed varying degrees of indignation. "But we haven't been counterfeiting anything!" cried Betty Marie, beating the others to the punch.

"I didn't say you had, and I don't think you have," said Jones. "I'm perfectly well aware that everything that goes into the reproducer is checked and registered down to the last milligram of raw materials. All the same, an inexplicable loss was reported from here—"

"But that was a year and a half ago!" said Betty Marie.

"—and it hasn't been cleared up," Jones went on, with iron persistence. "Now there has been another disappearance which nobody has been able to solve, and when the data were fed into an integrator, it came up with the suggestion that there might be a connection with your disappearance here. Gave it an eighteen per cent possibility. That's enough to work on, so here I am, seeing if I can get any angles from what happened in your case."

Dick Mansfeld said, "Can you tell us about this new case?"

"Don't see why not," said Jones, agreeably. "You're all highly classified, and you might be able to see some point that missed the others and the integrator, too. Well, it was the robbery of three million dollars."

MANSFIELD whistled. "That's a lot of dollars," he said. "How did it happen?"

"This way. You know, the flow of business is such that occasionally one

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bank district will accumulate more cash than it needs, while another one will run short. When that happens the Federal Reserve Bank in the district where there's an overage will make a cash shipment to the district that needs it. Well, about six weeks ago, on June sixth, to be exact, the New York Bank decided to send the three million to San Francisco. It never got there."

as good as mine. The thing was simply impossible. The money, mostly in large bills, was packed in an orlon bag by one of the cashiers of the New York Bank in the presence of one of the governors. That's required by regulation, and though I haven't checked on it yet, I'm sure there must have been two or three other people standing around. The bag was then sprayed with Brockenit.

The Bigger They Are

A GRASSHOPPER can jump a hundred times its own length; a man barely four times his. An ant can walk off with a load twenty times its own weight while a strong man can lift about twice his and a horse or an elephant considerably less than their own weights. And the big old dinosaurs could hardly stagger along under the crushing load of their own muscle.

The trouble lies in the square cube law, which states that if you square your size you cube your weight. Translated, if you are twice as big you are not merely twice as heavy, but *eight* times as heavy. Which means you've got to have eight times as much muscle to move you, which adds to your weight—and so starts a vicious cycle which is the main reason the dinosaurs died out. They couldn't move.

The same principle applies in power mechanics. If you double the weight *or the speed* of your car, you need eight times as much horsepower to shove it.

The square cube law sometimes gives engineers gray hair, but it has given our Fletcher Pratt the springboard nudge for a very different kind of story. Also, it's a sequel to DOUBLE JEOPARDY, which you read in the April issue.

—The Editor

"I didn't see anything about it in the papers, "said Mansfeld.

"There wasn't anything," said Jones. "They hushed it up, and I'm going to ask you to keep quiet about it, too—at least until they find out how it was done. That's what is worrying the big boys in Washington—not the loss of the three million, but the fact that they can't figure out a method, and they don't want to broadcast the fact. If the criminal knows that he's apt to try his little stunt again."

Dr. Runciman said, "What is your conception of how this bizarre disappearance was accomplished?"

Jones made a gesture. "Your guess is In case you don't know what that is, it's a chemical which is invisible, but which comes off on the hands, thanks to warmth and perspiration. Even then it isn't visible, except in ultraviolet light."

Betty Marie frowned and said, "How about somebody using gloves?"

"No good," said Jones. "The heat of the hands would still bring the Brockenit off and it would go right through the gloves. . . . Well, as I said, the bag was sprayed. Then it was taken to New York rocket-port by the same cashier who packed it, accompanied by the same governor and a couple of guards. The cashier personally packed it aboard the express rocket for San Francisco, to

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avoid letting anyone else get Brockenit on them. The rocket was closed up and left for San Francisco immediately, while the two of them were standing there. When it arrived, it was met by similar officials of the San Francisco Bank. The money-bag was supposed to be the first thing unloaded. It was empty."

The other three looked at him for a second. Then Dick Mansfeld said, "Ah. Did this rocket arrive on time?"

"On the dot. And the money wasn't lifted in San Francisco, either. As soon as the people there saw the money was gone, they held up the rest of the unloading, sent for an ultraviolet projector, and rayed everything in the neighborhood, including the interior of the rocket and the workmen as they unloaded the rest of the cargo. Not a trace of Brockenit."

Betty Marie shook her shoulders slightly and said, "It seems to me that some checking up on the crew of the rocket would be the logical step."

Jones smiled. "You people up here in Geneva should keep up with the rest of the world. I said the *express* rocket. It doesn't have any pilot; it's controlled by radio. Morover, if it had a pilot, he'd be thoroughly dead by time he got there. The express rocket takes off at an acceleration of 8g, and comes in on a deceleration of the same. The most any human being has been able to stand is a little over 4g, except on the moon run, where they can take 6g in some of those special pressurized harnesses. But not 8; nobody ever took that."

Dick said, "There wouldn't be any possibility of substituting another rocket—"

"Now you're just making wild guesses. It was the same rocket, all right. Numbers and everything. Besides, the rest of the cargo wasn't disturbed."

DR. RUNCIMAN cleared his throat. "Are you suggesting the possibility that the reproducer might have been used to duplicate both rocket and cargo?"

"Not at all, sir. The only suggestion was from the integrator. It has a memory-bank, you know; that's one of the reasons it's useful in a case like this. As soon as the data on the three million robbery were fed into it, it came back with your case here. And now I'd like to have you tell me about that, if you will, and take it for the record." He reached down for the recording box he had brought along. "Sometimes when you repeat a thing, some detail emerges which you unconsciously overlooked the first time."

Dr. Runciman sighed. "I've been over this so often, so often," he said. "Very well, I'll begin at the beginning. A little over a year and a half ago, the Astronomical Institute asked us to undertake a very special project. One of the very best men they have out at Mt. Wilson is Dr. Claude Draper. He was, and still is, engaged on some research into the problem of the cepheid variables. It is extremely arduous work, and because the stars are variables, changing from day to day, it requires constant attention. Dr. Draper is not particularly strong—there's nothing wrong with him, you understand, nothing at all, but his nervous constitution is unable to support the strain of the attention required. So Mt. Wilson applied for, and eventually received from the Bureau of Medicine, permission to have us duplicate Dr. Draper here, in the same manner that Miss Taliaferro was duplicated by—er—your wife."

Jones cut in, "Was this the first human duplicate you have made?"

"The first we attempted since that time, yes. The Bureau decided that the procedure was too dangerous generally to be allowed. Only the fact that Dr. Draper was a very distinguished scientist and that the duplicate could relieve him on a very important project induced them to permit it in this case. Very well. Dr. Mansfeld prepared the necessary chemicals. During the night

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before the duplication was to be undertaken, they disappeared from the reproducer room."

"Without any indication of what happened to them?" asked Jones.

"With some slight indication," said Runciman. "The power and radioactivity meters showed a consumption that would just about account for the reproduction of a human being."

Jones rubbed his chin. "Then you deduce that someone got in that night and made off with your chemicals by reproducing a human being, is that it?" said Jones.

"I fear so, I fear so," said Runciman, and Mansfeld added, "That isn't all, George. You know that when Angela was reproduced, she didn't have any moral sense at all. She thought it was quite all right to steal the design of the reproducer because Benson got hold of her before we could, and told her so."

Jones grinned. "I think she's changed," he said.

"Not by being married to you, you old seacook," said Mansfeld, and grinned, too. "But anyway, the point is that somebody has reproduced somebody else in a version with whatever ideas they chose to give the new edition —and it probably isn't good, because it was a sneak job in the first place. When the Bureau heard about it, they took a dim view."

"It was most unfortunate," said Runciman. "They even went to the length of prohibiting further experiments in human duplication, even in the case of Dr. Draper. Most unfortunate."

"In other words, George, you drew the only human duplicate there's likely to be," said Mansfeld. He looked at Betty Marie. "Now if I could only persuade the original—"

"Let's not talk about that," she said.

"All right," said Jones, "then the material that was to make the duplicate Dr. Draper mysteriously disappeared in the night, and you think it may have been used for a duplication. How did it happen? Don't you have this place guarded at night?"

"We certainly do," said Runciman. "You've seen the fence and the gate. Since the Bureau appointed itself our guardian, it strengthened the measures we had already put in force. The fence is strongly electrified, and to enter the gate it is not only required that you insert a metal indentification ticket in the slot, but also that the entrant submit to the inspection of a spy-ray. The portraits of those authorized to enter are on file in the device, and even if an unauthorized person had the correct identification, he would be rejected by the spy-ray."

"I know about spy-rays," said Jones. "There are ways of beating them."

"Really? I would not have supposed it. However, that is unimportant. After the spy-ray system was installed, it seemed rather pointless to keep a watchman up all night, so an alarm system was rigged to awaken him and at the same time to notify the police if anyone attempted to enter, either through the gate or by way of the fence. On the night in question, he was not awakened."

"No sign of the alarm being tampered with?"

"None whatever," said Runciman. "The authorities, among them several F.B.I. men, went into that exhaustively. They also investigated the guard."

"I see," said Jones. "It just couldn't have happened, but it did. I suppose somebody looked into the possibility of a helicopter landing in the grounds?"

"Oh, yes. Yes. Part of the alarm system is a network of infra-red beams criss-crossing the whole area from those towers in the fence."

"It's sometimes possible to beat them, too," said Jones.

Dr. Runciman smiled. "I am familiar with that. In fact, it is in my field. You can 'beat' infra-red beams, as you describe it, only by giving them too much to do; that is, breaking them at so many points that they cannot identify the essential interruption. In this case, there

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was no interruption at all."

"Once more it couldn't have happened," said Jones, "but I begin to see why the integrator turned up the possibility of a connection between your case and the one I'm working on. Both times something disappeared out of a place nobody could get into. Is that the works?"

Runciman nodded, and so did the other two when Jones looked at them in turn. He snapped off the recorder. "All right, then," he said. "I think I'll take a look at the gate first. It seems to me that that offers the best possibilities. Want to come along with me, Dick, and go through the motions of getting in so I can see how it works?"

II

AS THEY strolled down the walk to the gate, Mansfeld said, "What makes you so certain that this is it? The fellows we had here at the time all thought it was an inside job."

Jones shrugged. "Logic. They give us courses in it at the training school these days. The personnel at your institute hasn't changed, and you've lost something as a result of the incident—that is, permission to reproduce another human. Therefore I have to assume as working hypothesis that you didn't want it to happen and gained nothing from it. When we run into one of these cases, we always look for the man who quits the job."

Mansfeld punched buttons in an irregular rhythm, and the gate swung open. "Yes, but the gate?"

"Logic again. Have to reduce things to their essential elements. Subject to checking, the guards you've got set on this place with the wires and infra-red, make up an unbroken continuity. Therefore your chemical batch, whether it was made up into a man or not, must have gone out through the one place the continuity was broken. Now, do you want to go through your routine?"

The heavy gate had swung to behind them. Mansfeld stepped up to it, produced from his pocket one of the square metal identification keys, placed it in the slot of the scanner-box, and stood to one side. A pencil-beam of light, bright even in the full day, shot from the box, played rapidly across his features, making him blink as it did so. There was a momentary wait, a clicking sound, and the gate swung open.

"You see in this type the identification tag only actuates—" began Mansfeld, but Jones said, "I know how they operate. Do you always hold the tag that way when you put it in?"

"What do you mean?"

"Sort of by the edge, between thumb and forefinger."

"Never gave it any thought. I suppose so; it's the only way to get it into the scanner-box, isn't it?"

Jones spun slowly round on his heel, looking at the horizon. The minor road that ran past the front of the institute and over a low hill was lined with majestic maples, beyond which was a pasture with cows considering their cuds.

"Right about there, I think," said the Secret Service man, and pointed at one of the trees.

"Right about there for what?" said Mansfeld.

"That's where he was waiting, in that tree. With a tele-camera. Probably a movie machine. That would give him more negatives. In fact, with the right kind of machine, he could afford to repeat it on two or three different days."

"You mean somebody photographed me as I was going in?"

"Yep. You or one of the other members of the staff. With a tele, and enough shots, it would be easy to get pictures of the tag good enough to let them make a reproduction of it."

Mansfeld said, "What about the spy-ray?"

"Easy. At the same time he was taking pictures of your tag, he'd be getting good shots of you from all angles. With those on hand, any competent sculptor could make one of those plastic masks

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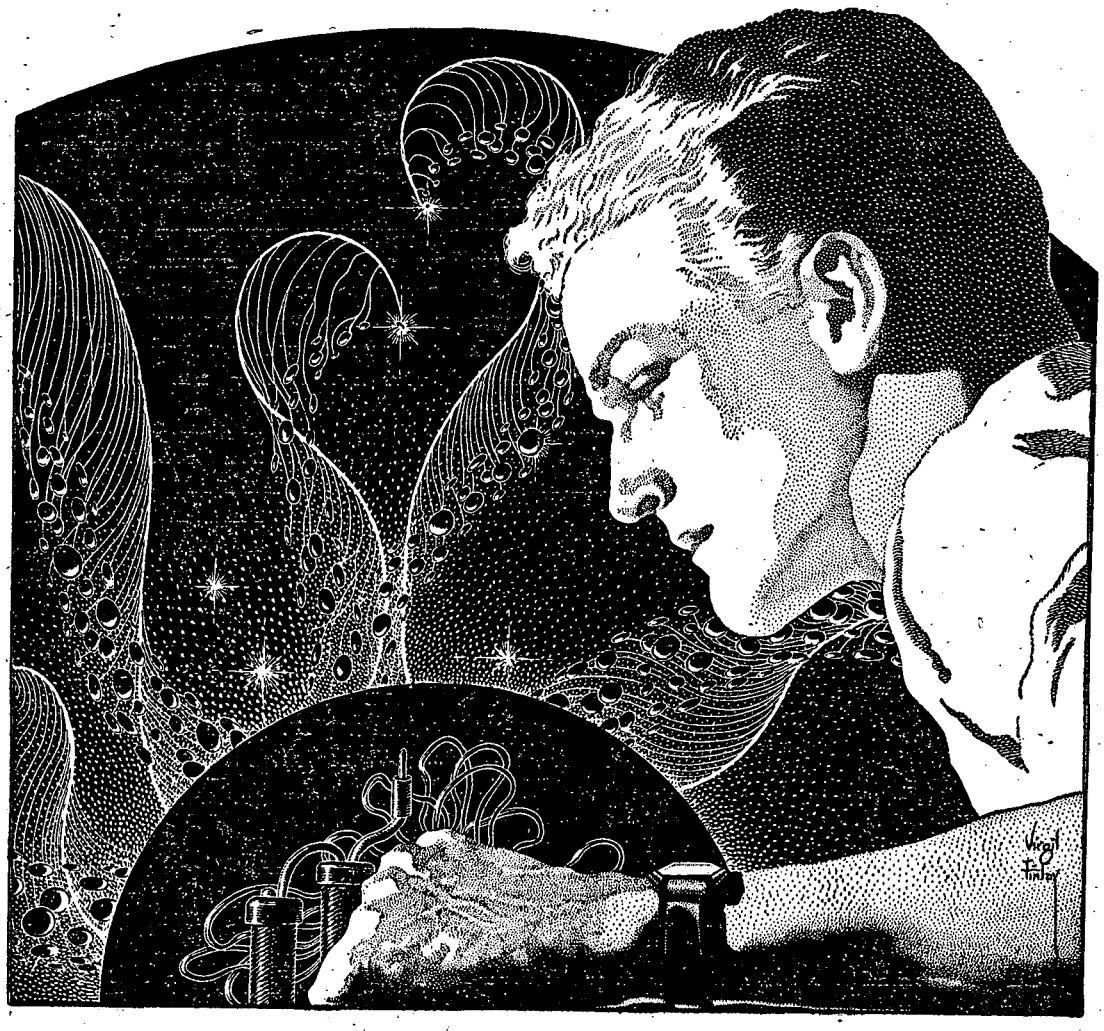

Warburton pulled some experiments which scared the profs

which would be plenty good enough to fool the spy-ray. That's how our burglarous friend got in, all right. What bothers me is how he got out. How many people know the combination of buttons that releases the gate from the inside?"

Mansfeld frowned. "Only about six. And it's changed periodically. But I think the gate can be propped open."

"Did anybody think of that at the time of your disappearance?"

"I don't know. If they did, they didn't say anything about it to me."

Jones sighed. "And a year and a half later it's too late to look for traces. We live and learn. The next question is who it was. How many people knew you were going to duplicate Dr. Draper?"

Mansfeld shook his head. "They went into that at the time, George. It wasn't spread around much, but it wasn't any secret, either. The *Journal of Engineering Chemistry* had an item about it."

"So that any subscriber could have known. Or anyone a subscriber talked to. It narrows the field down a little,

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but not much. Well, I think that about winds me up here. It's been great seeing you, Dick. Try to visit us in Washington some time."

They shook hands, and Mansfeld said, "Give all the best to Angela," and the Secret Service man stepped into his cab to begin the journey to New York.

THE HELI delivered him to the roof of the new Federal Offices building on Mott Street, and a few minutes later he was in the F.B.I. Case Executive's office, shaking hands with a tall, lantern-jawed individual, who bore an expression of permanent melancholy and the name of Dewey O'Neill. Inductions were completed, and the explanation made that O'Neill was handling the New York end of the $3,000,000 robbery.

The executive said, "What's the Secret Service doing in this? There isn't any counterfeiting angle."

Jones explained about the integrator reading, the indicated possibility that there might be a connection with the Braunholzer Institute case, and his selection because he had previously dealt with the institute. "However," he finished, "in view of what I found out at Geneva, I don't think there is any real connection. I'm not an integrator myself, but I imagine it put the two cases together on the basis of method—the disappearance of something from a place to which no one could have gained entry. But I've established the method at Braunholzer, and it wouldn't work for the rocket robbery. Pictures of the Reserve Bank people putting the money in the rocket wouldn't be any use to the criminals. So if you want me to bow out of the picture, I will."

The case executive had a florid complexion and the mustache of an old-fashioned bank president. Now he reached across the desk and picked up Jones's identification tag again. "Hm, you're an F.B.I. Training School man, and a Class Three investigator. We don't often get field men that high up the line ourselves. No, I don't think I want you out of the picture. You have different methods in the Secret Service and you may be able to turn up some angle we've missed. Especially as the case has just become active again."

"I thought it was sent to the integrator because it was quiescent."

The executive motioned to O'Neill, who said, "Just came off the tapes this morning. Some of the dough has started to turn up."

"It has! Where?"

"El Paso, Texas. You know they had the numbers on all the big bills involved, and sent through a general stop notice to Federal Reserve Banks."

"Yes, I heard the record on the case before I left Washington."

O'Neill gestured. "Okay. Well, San Antonio Federal got one of the five-hundreds. They traced it as far as El Paso, but since the warning only went to Federal Reserves and not to other banks, the trail drops there. El Paso thinks it may have come across the border from Chihuahua, because nobody on the American side has much use for money as big as that. Southwestern District has reported that they have a man on it."

"And the Mexican police at Chihuahua have been alerted to look out for big American bills," said the executive.

O'Neill grunted. "Fat lot of good that will do. If I know anything about those Mexican police, it will only give them a chance to pick up a bill or two for themselves."

"You're too cynical," said the executive. "Well, Mr. Jones, you've heard the record on the case as far as it's gone. Is there anything specific that suggests itself to you that we may not have followed out, or do you just want to take a general fishing expedition into the old evidence? Or would you like to have the record re-played?"

"No," said Jones. "I have a pretty good sono-memory. There were just two points I noticed, or rather didn't notice, when I heard the report. Did you try the *modus operandi* file?"

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O'NEILL drew down the corners of his mouth. "That's standard procedure with us. But we were a little hampered by not knowing what the M.O. was. However, we assumed by that it was a question of extracting something from a locked container, like a burglar-proof safe, and set it up on that basis. The file gave us four names." He began counting off on his fingers. "One was Ed Kamienski; he's doing ten years hard labor in the moon mines as an incorrigible, and is very much there. One was Louie the Lug, but he had a perfect alibi for the period of the robbery; wasn't even in New York. The name of one I can't give you because he was psyched and discharged as cured of criminal tendencies; he's going straight, all right. And one was a torpedo named Berent Arnesson, but he waived personal liberty, took a lie-detector test and even a shot of scope, and came out with a clean nose. The file didn't know anybody else smart enough to have pulled such a job."

"So it's a new practitioner," said Jones. "Well, I thought I'd ask, anyway. Second question: I don't remember that the report said anything about whether any employees left the Federal Reserve at the time of the robbery."

O'Neill and the executive looked at each other. Then the former said, "You think it might mean something?"

"Yes. Three million dollars would keep a man going for a long time, or even quite a bunch of them. I'd like to re-examine the case on the basis that it may have been planned as a tremendous one-shot, a lifetime operation. If it was, then we'll probably find at the bottom of it someone with a good previous record; someone good enough to have a job at the Federal Reserve. That's how he'd know when the money shipment was going. After the robbery, he'd quit and probably establish an identity elsewhere until he could release some of the bills."

The executive said mildly, "That doesn't exactly fit with the appearance of the five hundred dollar bill at El Paso this quickly."

Jones frowned. "I know it," he said, started to say something more, and then stopped.

"All the same," said the executive, "we can't do anything about the El Paso bill from this end, and I don't see any harm in looking into it."

He pressed the button on the desk phone, said into it, "Get me Di Paduano at the Federal Reserve," and switched the visi-plate on. Then he turned to Jones again. "Do your theories go so far as to explain how the money got out of the rocket?"

"I haven't the least idea," said Jones frankly. "I started out by imagining that it had never been in, but after hearing the report, I gave that up."

"You can say that—" began O'Neill, but before he could finish, the face of the banking man flashed on the visi-plate.

"How do you do?" said the executive. "We're re-examining some of the features of that rocket robbery you had, and we found we needed some information. Can you tell us which of your employees have left the service since the robbery?"

"Which of those who knew the money was going," put in Jones from the side.

"Did you get that?" said the executive. "Which of those who knew the money was to be shipped."

Di Paduano's dark face expressed acquiescence. "I think our personnel records will show that, though I can't be absolutely certain about a given person being aware of the shipment. Want to come over for it?"

The executive looked at O'Neill, who shook his head and said, "Too damn hot on the street," in a low tone.

"I think the phone would be adequate," said the executive. "After all, we both have tap checks, and this is merely an exploration."

"Let you know as soon as I have it," said Di Paduano and his face disappeared. The three men lit cigarettes and relaxed. "What's your idea about the

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background of this theoretical master criminal of yours?" said the executive.

"I doubt if he'll have much of any," said Jones. "He'll need to be a technical man, though, with at least a good working knowledge of rockets. And an inventive turn of mind. I'd say also that he has probably never been psyched, or if he has, that he turned out to be psych-resistant."

"Why that?"

"Only way of accounting for the fact that he'd go in for a large-scale crime against the state."

"You got a lot of faith in these government psychs," growled O'Neill. "Me, I think they're a bunch of witch-doctors with political pull."

The bell rang sharply. The executive snapped the key on his phone and Di Paduano's face reappeared. "Hello, Howard," he said. "I'm afraid I haven't anything for you. There haven't been any resignations or dismissals among the people who might know about the money shipment in recent weeks. The last one to leave us was a young man named Warburton, but that was on June fourth, two days before the robbery."

Howard, the executive, looked at Jones, who frowned. "May I come in?" he said, and came around the desk. He was introduced as Mr. Jones, who was working with Howard on the case.

"Can you tell us anything about this Warburton?" he asked. "What did he leave you for? Where did he go?"

Di Paduano registered a certain amount of disapproval. "I wouldn't worry about him. Wesley Eustace Warburton was one of our brightest young men. We had him in the balances department because he was so good with mathematics, but he was really interested in electronic chemistry, and had been studying it nights at Columbia. I understand he left us to go to the Deering Chemical Company."

"What about his back record? Where did he come from? Was he ever arrested, or psyched on order?"

Di Paduano's expression became one of positive shock. "May I remind you that your questions are an invasion of personal privacy unless you have a court order or a *prima facie* case against him? I'm afraid you'll have to ask someone else. Good afternoon."

The face disappeared. Jones looked around at the others. "Now, what in hell was chewing his liver?" he said.

"O'Neill laughed. "Don't you know that the Federal Reserve Bank, like everything else that's federal and has money connected with it, is slightly political? I bet you stepped on his white-haired boy, especially with the suggestion that he might have been psyched on order."

"That may be, but this Warburton fits the picture I've been drawing altogether too closely for comfort. Look, at least he has a good enough record so that nobody raised any objections to his getting into the bank; he knew the money shipment was going; he quit at about the right time; and he has technical knowledge. Do you F.B.I. people use probability analysis?"

The executive rubbed his chin. "You ought to know, if you went through our school," he said. "And you ought to know that those are only second-order probabilities, because you haven't demonstrated that any of those characteristics are absolutely inseparable from the robbery—except for the technical knowledge.

"But I agree the probability is high enough to seek a little more light. Let's see, O'Neill, you're familiar with the background. See if you can find out this Warburton's address, who his friends are, get a picture of him—the general personal investigation. It will be more efficient if you, Jones, take the other end—that is, look up the man himself at Deering Chemical. Indirectly. If he's as acute as the person you've pictured, he'll be pretty careful about new acquaintances who ask questions." He looked at his watch. "Conference at sixteen-thirty tomorrow. All set up for the evening, Jones, or would you care to

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have a couple of drinks and see a tri-di at my club? Don't know what they'll have on, but it's usually pretty good there."

III

JONES staggered into the bathroom, groped the bottle of hexamerone off the edge of the wash basin, poured himself a man-sized slug, turned on the shower and sat down under it to wait for the dose to take effect. The building was still revolving, but at a slightly lessened rate, when the phone rang. He swore, wrapped a towel around himself, and hurriedly got back into the room in time to cut the visi-plate.

As he had more than half expected, Angela's voice came out of the device: "And how is *your* hangover this morning, my dear, with the visi-plate off? Is there enough hexamerone in New York to take care of it? Or shall I—"

"Listen," he said, "I'm in a foul mood, and if you don't lay off, I'll go back to the institute, get another duplicate of you and elope with her. So there."

"If you do, I'll have Dr. Runciman duplicate your worthless carcass and elope with the result. Remember, he's a friend of mine, too. How's the case?"

"It's turned into two cases, and one of them I don't think I'm going to win any promotions for. The other one looks fairly hot. It's—"

"I've got biscuits in the oven, and can't wait to hear about it now."

The hexamerone was taking hold and the hangover sensations were practically gone, as Jones recognized the little code he and his wife used when there was something to say, but they didn't quite trust the tap check. He made his voice cheerful and casual.

"Okay, dear, don't let them burn. Give you a ring when I get off the job." That meant he would call back as soon as he could reach a safe phone. The connection clicked off.

Jones finished drying himself where he was and dressed rapidly. He had taught himself not to speculate in the absence of data, and carefully tried to keep his mind a blank, but a wave of anger swept through him at the thought that somebody or something had been bothering Angela. It wasn't the first time politicians had tried to interfere with his cases in one way or another, but damn it, why couldn't they mind their own business. Or maybe that was their business.

Outside his hotel window, New York lay under a glare of brilliant July sunshine that promised a day even hotter than the one before. He gulped a cup of coffee from the Servo, and caught an air-conditioned taxi, giving the address of the Federal Offices building. At least the phones there would be immune to taps. Angela's face flashed brightly on the screen in the booth.

"Feeling better now, darling?" she said. "You should really have a recording of your voice this morning to remind you that strong drink is ravaging."

"Never mind that," said Jones. "What's the story?"

"It's nothing serious, I think," she said. "Just that somebody's been snooping around to find out what case you were on. Last night. Cliff and Marie were over, and they told me. Cliff thinks the chap was a Treasury man."

"Oh," he said. "Well, don't worry about it. I just had a momentary spat with a big pot of a banker."

"All right, darling. Take care of yourself. 'Bye, now."

Di Paduano, thought Jones, as he clicked off the circuit. Federal Reserve Banks were under Treasury. He must have worked pretty fast, too. Which meant that he must have been plenty disturbed over the inquiries about Warburton. Which meant in turn that there was something very peculiar going on somewhere. Jones considered the possibility of Di Paduano himself being mixed up in the rocket robbery, as he endured the puff of heat on the street while waiting for a taxi to take him to

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Brooklyn and the plant of the Deering Chemical Co. Three million cash might be enough to attract even a man who had worked up to the position of governor in the Federal Reserve system.

But no, it wouldn't fit, he decided, as the cab slid smoothly into the old Brooklyn tunnel. Di Paduano would have no opportunity to establish the alternate identity for the enjoyment of the proceeds which his theory required. Also there was the slight matter of physical accomplishment. Jones's memory readily yielded from the record the name of the governor who had seen the money aboard the rocket; it was not Di Paduano, it was Morton. If Di Paduano had monkeyed with the money-bag, it must have been before the money was packed, which didn't seem likely. It was conceivable that somebody might have worked some version of the gypsy switch in packing the bag, but in that case the bag would have been full of newspapers when it reached San Francisco, and it wasn't; it was empty. It was not conceivable that Morton had allowed an empty bag to be placed in the rocket. The whole thing made up one of those departures from the norm which the Chief was always warning him to look for, as indications that there was something more to look for, but as yet there was no explanation.

THE Deering Chemical plant sprawled along the harbor front, neat and very clean, with the smoke-disposal caps on its chimneys looking like exaggerated onions. The taxi swung past an ornamental hedge and stopped before a door of classical simplicity. Inside, the conditioned air was perfumed with the fragrance of pine forests. It would be, thought Jones, as he gave his name to the goddess with a neckline cut way down to here, and asked to see the personnel manager.

The goddess said they weren't hiring except for second-class technicians, blinked rapidly at Jones's credentials, did something with the whisper-phone, and told Jones he could go in.

He found a fat man in a pink-striped suit, who offered a hand without getting up, announced his name was Esselstein, and ostentatiously switched on his desk recorder.

"Just to make certain that you don't try to trip me into violating the personal liberty laws," he said, amiably. "I've met you federal people before."

Jones said, "I don't want to ask you anything that would violate P.L. Just wanted to ask whether your records included a picture of a young chemist who joined your organization recently. Name of Warburton."

"Warburton!" Esselstein reacted so violently that it seemed likely the elastic chair would pitch him over the desk. "No, we don't have a picture of him, and I'll tell you why; he doesn't work here and never did."

Jones lifted his eyebrows. "He left his previous place of employment on June fourth, saying he was going to report to you on June fifth."

For answer, Esselstein pressed a button on his desk.

"Bring me that Warburton file, will you?" he said, and then reached over and switched off the recorder. "I'm glad to see that somebody's looking him up. Has he been up to something?"

"Not that we're sure of," said Jones, as a girl brought in a brown file which Esselstein opened.

"I'll be glad to give you all I can about him," he said, "and since he never actually joined us and completed his employment records, there's no violation. The fact is that he applied for a job here, got it, and then never showed up to go to work. You're wrong about the date, though; it was June twelfth he was to report, not June fifth."

Jones made a note. "Here we are," said Esselstein. "Wesley Eustace Warburton. Gave his birthplace as Lubbock, Texas. Unmarried. Graduated from Columbia, night course, with honors. Current employment when applying, Federal Reserve Bank of New York,

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which recommended him highly. That much we checked, but to get any more about his background, we'd have to wait until he was actually employed here. He applied to us some time in April—here it is—as an electronic chemist. We have a very complete system of psychological and technical examination at this place, and Warburton passed everything with the highest grades, almost, of any prospective employee we ever had. I was convinced that Deering was getting a real prize, and he seemed very happy to join us. But on June twelfth, when he was due, he never showed up, didn't answer phone calls or letters, and when we sent someone to where he lived, they said he had moved. All the Federal Reserve would give us was that he had left there. He seems to have just disappeared."

"Did you try Lubbock?" asked Jones.

"That would be pretty close to a violation of personal privacy, wouldn't it?" said Esselstein. "No."

"Where did he live?"

"Three hundred fifteen West Twenty-eighth St., New York. His phone had been disconnected," said Esselstein, glancing at the folder.

"You saw him yourself, I suppose? What did he look like?"

Esselstein closed his eyes. "Medium height, about five feet seven, I would say. Very pale blond hair. Quite well set up."

"You don't know the Echols system of describing a man by his walk-rhythm, do you?"

Esselstein chuckled. "No, I've tried fooling with it, but it takes a little too much memory work and is a little too complicated for me."

"Too bad. And you haven't anything else about him?"

"Not a thing. The research department here was not very happy over missing out on someone who promised to be a star chemist. There aren't very many in the electronic end, you know, but we just supposed he had a better offer somewhere else, and as he hadn't signed any contract, there was nothing we could do about it. Want to tell me why you're trying to trace him?"

Jones hesitated. "I'm afraid I can't tell you very much. It's a Federal case, with quite a few involvements. But I'll tell you what I will do. If we find him, or find out what happened to him, I'll phone you even before it's released to the newscasts. And thanks."

"It's a deal. I'll tip you off if anything else turns up." This time Esselstein stood up to shake hands.

BACK at Federal offices, Case Executive Howard opened the conference. "I have two pieces of news, one negative, and one not very good. Southwestern District is almost certain that five hundred dollar bill came through from Mexico, and the Treasury Department has put through a request to know by what legal warrant you are on an F.B.I. case, George."

Jones shook his head. "You know the answer to that. Can they have me pulled off?"

"In time, no doubt. Meanwhile, I can delay matters for a week or more with an application for your services on technical features of the case. I've taken care of that. I presume we owe this to our cooperative friend, Di Paduano."

"I wish I could see some connection between him and the case, or between him and Warburton, for that matter," said Jones. "Did you find any, Dewey?"

O'Neill studied the ends of his fingernails gloomily and shook his head. "I didn't find any connection between anything and nothing," he said. "The first thing I done was go around to the bank about lunch time. There was two or three of the guys there I got in pretty good with when I was fresh on the case, and I figured on maybe taking one of them to lunch and opening him up with a couple of swift drinks. The first part worked swell; I got two of them instead of one, and when I told them one of the bills from the robbery turned up, they started to talk like hell, but as soon as

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I said something about Warburton, they looked at each other and then clammed up."

"It would seem to me," said Howard, "that there's a distinct difference in the way those Bank people approach the two questions—the robbery and Warburton."

"It's an inconsistency," said Jones, "and it will have to be cleared up. What next?"

"Next I took the Columbia angle. They knew all about him up there. He was one of their star pupils in the night class. I got an address for him—"

"Three hundred fifteen West Twenty-eighth Street?" asked Jones.

"That's right. Haven't had time to check it yet. I also got a good description, but no picture, and none of the profs knew the Echols system, but I did show them the ear cards, and got them to agree that Warburton's were B-4s. They said he never mixed much with the other students, or went in for the regular college business. He was older—late twenties, they guessed. But he was a hell of a hot shot in a classroom, and even pulled some experiments that scared the profs."

"What kind?" said Jones, with interest.

"Didn't say. In fact, I got the idea they were clamming up on me a little on that. But that's the works. What have you got?"

JONES gave an account of his visit to Deering Chemical, and descriptions were compared. They checked. Howard said, "I think I'll ask Southwestern to put a man on the backtrack at Lubbock. We might turn up something there, and this disappearance of Warburton at the time of the robbery certainly gives us adequate reason to violate his liberty a little, even if he's not our man. Now—"

Jones held up a hand. "There's one more discrepancy I'd like you to note," he said. "And it's one that enormously strengthens our case on the personal privacy angle. Warburton left the Federal Reserve on the fourth, before the robbery. But the first time he was due anywhere else, that is, the first time people began looking for him, was on the twelfth. That covers the period of the robbery and still gives him time for a getaway."

"I agree," said Howard, and then frowned. "We can't get over the question of method, though. Well, I think the next thing is to try farther along the backtrack. Maybe we can find someone at Lubbock to make a complaint that will bring Missing Persons into it; they have a good line of stools and could help us out a lot. In the meanwhile, George, suppose you spend the evening checking that address where he lived, and you, Dewey, try to get hold of one of those bank employees by himself and do a little roping."

"I see it another way," said O'Neill. "This Warburton seems to be the fair-haired boy everywhere. What if we got a murder or a snatch case on our hands—hooked up with the money, somehow?"

"The possibilities are—" began Howard, when the phone rang and a secretarial voice said, "Can Mr. Jones accept a call? The man says it's urgent."

"Put him on," said Howard, and moved from behind his desk to let Jones come round. The chubby face of Esselstein looked from the plate as he turned the voice up to room amplification.

"Oh, hello, Jones," said the chemical firm man. "With regard to that person we were discussing today, Miss Kirsch tells me something I didn't know when I talked to you. On the fourteenth, two days after he was due here, some woman who wouldn't show her face called for him on the phone, and then again the next day. And the receptionist says that about the eighteenth there was a man around inquiring for him. She thinks he might have been a detective, but he didn't show any credentials, and you know how those girls are."

"Thanks a lot," said Jones. "I'll let

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you know if I find anything."

He switched off and turned to the others. "Maybe it is a snatch at that," he said. "Confound it! I'd like to put this whole business into an integrator. It's getting too complex for me to handle."

Case Executive Howard grinned wisely. "The integrator won't accept human theories or emotions," he said. "That's why they pay us our salaries."

IV

THREE-FIFTEEN West 28th Street proved to be one of those buildings of down-at-heel magnificence, built during the '70s, when the rage for colored glass brick was on. The chromium flashing was ripped here and there, the door to the under-building garage was not quite closing, and the walls bore the marks of the inexplicable games children play with chalk and balls. There was no visi-plate at the door, only an entrance with a row of bells. Over the bottom one was a tag that might at one time have said "Supt."

Jones pushed the bell. After a wait of more than appropriate duration, there was a sound of feet within, and the door came open on an individual who had apparently not been able to afford his depilatory for the last three days. "What is it?" he said.

His breath smelled. "I'd like a little information about a man who used to live here," said Jones.

"Which one?" said the individual, and scratched.

"His name is Wesley Eustace Warburton."

"Oh, him. He moved away. Didn't leave no address."

"When did he go?"

"I dunno. Some time in June, I guess."

"How far was his rent paid up?"

"I dunno. You have to ast the agent that."

"Did he have much stuff with him?"

"I dunno. Wasn't here."

"Look here, my friend," said Jones, in an exasperated tone, "it strikes me that your memory is pretty poor. Isn't there anyone around here that knows at least some of the answers to these questions?"

The thick lips came out in a pout and the eyes shifted. The Supt. murmured, "The last guy that ast gi' me five dollars."

"Well, I'll give you a trip in the pie-wagon." Jones flashed his identification. "This is a Government case, and you can talk or else."

"You can't make me talk. I got my personal privacy."

"Save that one for the birds. I'm not asking you anything about yourself, unless you had something to do with his going away. Now are you going to talk to me here, or come down to the Federal Building and talk under a machine?" Jones felt for the handle of his needle-gun; sometimes these sterling characters turned nasty.

The Supt.'s eyes followed his motion. "What you want to know?" he said.

"When did Warburton leave?"

"Night of June fourth."

"How did he go?"

"I dunno. Honest, I don't. I think he went down to the corner and just took a taxi."

"Did it look as though he were going away for good?"

"He had two big bags with him. When I went up to his room afterward, there wasn't nothing in it. Not a thing."

"But he didn't tell you in advance that he was moving out?"

"I'm telling you, mister, I don't know nothing about how long he was going away for, or what. He comes down in the elevator with them bags and goes out the door. Nobody called for him, or nothing."

Jones had questioned enough unwilling witnesses to be fairly certain that he was getting as much of the truth as he could obtain without a lie-detector. He switched the line: "Well, while this Warburton was living here, did he have many people visiting him?"

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THE THOUGHT appeared to strike the Supt. as new. He cocked his head and considered it slightly. "Not many. There's one guy I notice, comes around two-three times and they go out together. Some kind of a Spaniard, I think. At least he looks like one, but I never hear him talk."

"All right, what else did he look like? Tall or short? Fat or skinny? Tell me about him."

"He's about medium height, not very fat, and he looks—well, I dunno, he just looks like a kind of Spaniard, you know." The voice ended on a note of indignation over the effort required by the obviously impossible task of describing another person.

Jones said, "Did they seem to be very friendly?"

"Mister, I dunno. All I know is, he comes here two-three times, and once he brings one of them frozen dinners and takes it up."

"Did Warburton have any other regular visitors? Women, for instance?"

"I never see none. He used to go out a lot, every night almost."

"Yes, I know. He was going to college at night. How did he live otherwise?"

"I dunno, what you mean."

"Well, you or someone must have been in his room to clean it up. What did it look like?"

"Oh, I get it. Just like a room, you know. He didn't even have a television. Only some books and tapes."

"What became of them when he went away?"

"I dunno."

"Well, could he have carried them all in the two bags you saw him with?"

This appeared to cause the Supt. another spasm of thought. After giving it reasoned consideration, he came out with, "Maybe not. There was a lot of them tapes, and the machine to work them. He had some kind of electrical machine, too."

"I see," said Jones. "Now, there's just one more thing. You said that someone came here asking about him after he left. When was it, and who was it?"

"There was two of them. The first one was a dame, about a week after he leaves." The Supt. gave a sidelong glance and gestured with his hands to indicate a shape of appreciable form. "Some babe! She drives up in one of them Cardigan two-seat bubble cars, the kind with the one wheel in front."

It was no use asking him to describe her. Jones said, "Had she ever been here before?"

"Not that I seen."

"Okay. And who was the other one that asked for him?"

Supt.'s voice held contempt. "One of them correspondence-school dicks. About two, three days after the dame comes round. He's the one gi' me five bucks."

Jones reflected that he probably didn't get his money's worth, but people who work on expense accounts can afford not to care. He said, "How'd you know he was a private eye? Show you his tag?"

"Listen, mister, I been around. He even tries to get me to leave him alone in the room, see? I dunno whether he wants to put in a tap or make one of them dust collections, but he don't get away with it."

Yes, I'll bet not, thought Jones; if another five dollars followed the first, there probably isn't a speck of indicative dust left in that room that could be taken out with a high vacuum.

He said, "Okay. Thanks. I'll put it in the record that you've been very cooperative. What's your name?"

BACK at the hotel, the light was on beside the phone, and when Jones switched it to get the record, the voice of Case Executive Howard came out.

"If you get in before midnight, call me at my apartment, Eldorado 72-6636." The voice that answered when he obeyed this injunction said that Mr. Howard had gone out, but would the caller make a record? Jones did so, then

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deciding that going out to a tri-di would only cause another miss, and that he couldn't be bothered with any of the programs offered by the television, he put in a call for Angela, talked to her for a few minutes, and then sat down for a rather disconsolate wait, with a Scotch-and-wonderfizz for company.

The possibility that Warburton's disappearance had been involuntary was pretty much out of the picture now, he decided. The fact that the chemist had denuded his room of the tapes, books and electrical machine that couldn't have gone in the bags, pretty much kicked that out the window. It was a planned operation, a real disappearance, which made his own theory that it was somehow connected with the rocket robbery stronger and stronger. The thing had been carefully rigged, and for some time back.

But finding Warburton did not promise to be easy. In his life at home, as at college, he apparently kept pretty much to himself—except for the "kind of a Spaniard" who brought a package of frozen dinner. At this point in his meditations, Jones' memory was jogged by the fact that one of the bills had turned up on the Mexican border. The "kind of a Spaniard" could have been a Mexican; and Warburton had come from Lubbock, Texas. Was there a connection?

Also, Warburton's disappearance had disturbed someone else enough to make them put a private detective agency on the job. In spite of the fact that the agencies could and did keep their records secret, the right people in the police could usually find out, and Jones made a mental note to ask someone in the New York police to find out who was interested in Warburton. A woman, pretty clearly; the unknown female voice that had called Deering and the "babe" who had asked for him on 28th Street were obviously the same, and the private investigator who followed up her own failure to obtain anything definite was quite as obviously the by-product of that lack of success. Jones made a mental note to have the marriage records checked; there was just a possibility that the babe might be quietly married to Warburton, after all.

The trouble was that any one of those reasons furnished an adequate motive for the disappearance all by itself, without bringing in the robbery. This double motivation, in fact, furnished one of those inconsistencies the Chief was always talking about. Either both were operative—and the woman was in some way connected with the robbery—or only one of them was; and since his disappearance was somehow connected with the woman, this would mean it was not connected with the robbery.

A little dismayed over the fact that his reasoning was threatening to take him right out of the case, Jones got up to put it on a record for the next conference with the Case Executive, when the phone rang.

"Hello, George," said Howard's voice at the other end of the line. "I'm not putting this on visual. This is a public phone without a check. But some more of that stuff has been turning up, right here in New York city. I'm working on it now, and so is Dewey O'Neill. Meet you in the automat drugstore at the corner of Broadway and Seventy-second as soon as you can get here."

V

THE PINK and blue enamel booths of the automat drugstore were full of high school youths, chattering feverishly, mostly about the day's game between the New York Giants and the Los Angeles Angels and the pitching of Alinda Kenny, the Angels' new girl star. Jones passed one in which Howard was sitting alone, gloomily contemplating a cola drink. Howard did not look up, so Jones pushed on past to the rows of vending machines, picked out something that advertised itself as "Caribbean

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Star-apple," inserted his coin and took it back to the booth.

"Mind if I sit here?" he said in a sufficiently loud tone, and as the other shook his head, slid in. "What's the pitch?" he asked in a lower tone, not looking at him.

"One of the fifties came into the Federal Reserve this afternoon. They checked back and found that some of the ones and twos had been coming through, too, which is all right. You couldn't expect them to keep a warning on bills that small."

"Here in New York?" asked Jones. He sipped his drink, and made a face as he found it was just as bad as he expected.

"Yeah. The fifty came from the branch of the Chemical on West End Avenue. I got the city police on it, and they traced the bill to a store over on the Drive, at Seventy-eighth Street."

"Why the cover?"

"I picked up a tail at the store."

"Where is he?"

"Three booths down."

Jones pursed his lips in a soundless whistle, then, still without looking round said, "Okay, I'll take it. Put the dog to bed."

He dropped the remainder of the Star-apple and its discardable container into the chute, slid out, and walked rapidly to the door. He slipped around the corner, and stood waiting. The only persons to follow him out were a pair of teenagers. The probability that they would be shadows was low; neverthless Jones decided to forego the blandishments of a passing taxi and set out on foot westward through the humid heat of a New York summer night.

It was not an assignment he particularly cared for, in that section where the magnificent apartment buildings of an earlier day had run down into many-storied rooming houses, crowded with tough characters. Officers of the law had been known to get a gelatin slug in the back of the head and to be relieved of everything they owned, merely because they were the law. Jones did not flatter himself that his cover was so good as to make him unrecognizable.

The streets were full of children screeching over their games, and on the steps were groups of boys and girls. As he passed one of them, there were furtive glances at the Secret Service man, and Jones saw a bottle passed rapidly from one hand to another. It was probably trujillol, the terrible stuff that is both liquor and dope; but that was none of his business at present, and he pushed on without appearing to notice.

The lawns along the Drive were covered with more groups; the store on the corner of 78th proclaimed it was a "Charcuteria" in hot red electric letters that wiggled. It wouldn't be much use putting his question directly in a place like that, Jones decided, and taking his subject in would lose too much time. He would have to plan a campaign.

THE PLACE was darker inside than it looked from the outside, with cheeses in bags hanging overhead like sleeping bats, and bins of fruit. A fat woman with a slight mustache regarded him with some disfavor as he looked over the goods in the plastex case. He indicated one of a series of closed dishes marked "Arroz con pollo—to heat" and said, "How much?"

"Seventy-fi'," said the woman.

"I'll take it."

She got a bag for the merchandise. Jones produced his wallet, looked in it, and gave an exclamation. "I'm sorry," he said, "but I don't have any change. Can you break a twenty for me?"

The woman extended her hand across the counter, accepted the bill, and took it toward the light at the back to scrutinize it. "It's all right," said Jones. "Though I don't blame you. You probably don't get too many big bills here." He was cudgelling his brain for a better lead, when she surprised him with:

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"You gon' ask about that, too?"

"You mean the fifty-dollar bill? Has somebody else been asking?"

"You gi' me money, I tell you." The hairs of her mustache trembled slightly.

"How much money?"

"Fi' dollars."

She was a Latin.

"Too much," said Jones. "I'll give you two."

They batted it around for a while, finally reached an agreement that three and a half would be a fair price for the information she had to dispense, and she leaned across the counter.

"All ri'," she said. "This fifty-dollar bill is gi' me by Jesus Perez. He's a no-good man; I think he sell trujillol."

"Is he a Mexican?"

"I do' know. I guess maybe."

"Did you ever see him with a blond American?" Jones described Warburton as nearly as he could without having seen him.

"No, never seen him."

"Where does this Jesus Perez live?"

"I do' know. Round here, somewhere."

That was a setback, and it was no use asking for a description of him, either. However, if his name was really Jesus Perez, and if he was enough of a character to merit the description of "no-good," he probably had a record. But that would take time.

"How often does he come in?"

She gave an expressive shrug. "Sometimes, sometimes not. Most late night."

"Has he been in tonight?"

"Not yet."

Jones made a sudden decision. "Look here," he said. "I'll tell you what I'll do. I've got to find this Perez, and if you help me, I'll make it worth your while. I'm going across the street, where I can watch your window. If Perez comes in, I want you to move one of those melons into the window. If you'll do it, I'll give you five dollars now and five more after I find him."

An expression of peculiar craftiness spread across the woman's face. "All right, I do it," she said, and held out her hand.

The heat outside hit Jones like a hammer. Children were still running and little groups still walking about the street, but he selected a stoop across from the "Charcuteria," settled himself with the air of a man who could do no more in such weather.

The tail Howard had picked up was probably an agency man—the same agency that had been looking for Warburton. And almost unquestionably, whoever had been asking about the fifty-dollar bill before Jones himself had also been an agency man. But how had the agency learned so quickly of the appearance of the fifty-dollar bill from the robbery? There seemed only one satisfactory answer to that. They must have received the information from Di Paduano, governor of the Federal Reserve Bank. But why had he put a private agency on the case while reporting the appearance of the money to the F.B.I.? The answers to that were a good deal less satisfactory; in fact, they were not present at all.

Then Jones remembered something else. He himself had already made the connection, within a high degree of probability, between the agency and the mysterious woman who was looking for Warburton. If the agency now stood convincingly connected with Di Paduano, then Di Paduano and the woman were connected. Things equal to the same thing are equal to each other.

Across the street, the woman with the mustache stepped to the window, took out a bottle of vinegar and replaced it with a melon.

The man who had come out of the Charcuteria with a plastic bag in his hand was short, and in the red glare of the light, he looked extraordinarily broad-shouldered. Probably a shiv man, thought Jones, as he threw away the remains of his second cigarette, got slowly to his feet, and began sauntering east on 78th. He didn't look too often at Perez, but often enough to catalog

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and classify his walking-rhythm according to the Echols system. He didn't seem to be in any hurry and at the corner he waited patiently for a bus to go by. In the next block, he went to the second building and ducked in. Jones waited for long enough to make sure it wasn't a trick, which it might be if Perez had any idea he was being followed. Then he slipped over and noted the number, 353, with the word "Rooms" in the hall over the row of bells. If Perez had the $3,000,000, he certainly wasn't making much of a splash with it.

Jones turned into the avenue, located a drugstore of the non-automat type, and found the phone—one of the old kind, without a visi-plate. The duty man at F.B.I. said Howard was still out. Jones told him that the big deal was nearly closed, but he needed a witness, and gave the address. "The name on the door is Jesus Perez," he said, and the duty man said he would have the local office take care of it.

That meant that a police squad would be on hand to cover any exits at the rear, and that Howard was probably still entertaining his shadow, the agency man. Jones felt good as he rounded the corner again to keep an eye on 353, stepping toward the curb to avoid a group of three men coming along abreast.

IT HAPPENED so quickly that he didn't even have time to react. The group apparently split to let him past, then as he stepped forward, a line of snake-wire whipped from one to another and was around his body, pinning his arms to his sides as they closed in.

"Don't worry, Fed," said one of them. "We aren't going to hurt you. We'll just keep you on ice for a while, till we do some business."

Too late, Jones remembered that the proprietor of the Charcuteria had taken a bottle of vinegar out of the window when she put the melon in. The agency boys must have reached her first. That was why she had smiled.

"Some of you dime-store dicks are going to find yourselves without licenses," he said, bitterly.

One of them laughed. "Leave us take care of that," he said, "and come right along and get your lollipop. Don't start yelling copper. It'll get you a pop on the head in this neighborhood." They were urging him gently up the hill, away from 353, surrounding him so closely that the snake-wire would be invisible.

Jones formed a mental picture of the police squad arriving just in time to let Perez slip through their fingers because they didn't know who they were looking for. He filled his lungs desperately, and at the top of his voice, shouted, "Fire!"

The one on the right hit him. The one on the left let go.

Jones yelled again. "Fire! Fire! Fire!"

All down the street people were turning, heads were being thrust out of windows. A couple of lights went on.

One of the trio said rapidly, "I'll cover it, Larry. Get this yap out of here." He vanished as a little group began to gather. Jones felt the snake-wire whipped from around him, and his arms were gripped hard. One of the agency men addressed the group of five or six! "It's all right, everybody. He's just loaded up with trujillol."

"I am not," cried Jones. "There's a fire in 353. These guys started it!"

The group was nearer ten than five or six now, and he was beginning to get them. In a crowded tenement district, the arsonist is a deadlier enemy than the policeman. Someone said, "What for you hold him?"

Unfortunately, one of the agency men was quick on the uptake, too. He swept his free arm around in a sweeping gesture. "Listen, everybody," he shouted, "this guy is just a nut. Somebody beat it up to the corner and turn in an alarm, and we'll see if there's a fire. You!" He pointed at the objector,

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who glanced over his shoulder, shrank back a step, and then under the impulsion of that monitory finger, began to move in the indicated direction.

In a conversational tone, Jones said, "You guys won't get away with this. This is Federal heat."

"Yeah?" said the other one. "You don't know how much punch we got behind us. If you—"

SOMEBODY yelled, "Look! Cops!"

Jones saw heads swinging to a point behind and over his right shoulder. The man on that side let go; he swung round just in time to see the big plastex bubble swing gently down from the helicopter overhead, and a pair of blue policemen leap out, riot-guns ready. The bubble whirled upward again and a day-light stabbed down brilliantly onto the doorway of 353, just as it swung open and two men dashed down the steps. One of the policemen tried to halt them; there was a flurry of action, the policeman went down, Jones saw a hat come off a head so brightly blond that it looked white in the day-light, and the pair were lost in the shadows and the crowd that immediately began to gather. He pushed aside a gaping Chinese and rushed forward, waving his identification tag.

The cop who had been knocked down was on his feet. "Get that blond guy!" cried Jones.

"Not in this neighborhood, chum," said the cop. "You pick him up later. You the guy that called for the squad?"

"Yes, but it's probably too late," said Jones. "Let's go in anyway, though. I think I have a big-time hood stashed in there. Have you people got the back covered?"

"Yep. Roof, too. We always make the cover-drops first on these jobs. The lieutenant turned on the heat as soon as he saw what the address was."

"All right, let's see what we got left," said Jones.

He stepped into the hall, followed by one of the policemen, while the other put his back to the door and faced the murmuring crowd in the street.

Before either of them could ring, the inner door was opened and a thin woman, a robe clutched around her, was saying, "If you want Mr. Perez, he's in Three-B."

Jones glanced at the arrangement of the hall. "You come up the stairs," he told the cop. "I'll take the elevator."

It was ancient and decrepit enough to belong in a museum, one of the old self-service type of fifty years before. Jones produced his needle-gun and stepped out of it just as the officer made the head of the stair-well, riot-gun held purposefully forward.

"No use knocking," he said, and strode forward to grip the door-handle of 3B.

It opened without resistance on what had once been the living-room of a small apartment, now chiefly occupied by a bed, dirt and disorder. The lights were on, but unless there was someone under the bed or in the bathroom, the place was empty. The window was open.

Jones had taken two steps toward it when someone came over the sill with raised hands, and behind him followed a policeman in blue. As classified by the Echols system, his walk was assuredly that of Jesus Perez. But the utterly astonishing, rather frightening thing was that Perez was wearing the head and face of Dr. Richard Mansfeld, chemist of the Braunholzer Institute.

It worried Jones for only a moment. Then he said; "Let's get that plastic mask off and talk business—even if the best fish got away."

VI

THE SHORT MAN in the chair by the window was named Swigart. He was a New York detective.

He said, "We did everything we could, but we couldn't get a crack out of him. He sticks to it that he got the nine hundred and fifty playing the races."

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Howard permitted himself a faint smile. "And all the bills in the lot were new and came from the missing rocket shipment," he said.

Swigart snorted. "What can you do? The first thing he did was yell for a mouthpiece, and the springer won't even let us put the lights on him. Personal liberty laws!" He snorted again, resignedly.

"I'd expect anyone with a record like his to know all the loopholes," said Howard. "You know it, don't you?"

"I knew he had one, that's all," said Swigart.

"It came through about an hour ago. This will be news for you, too—" he addressed Jones— "Jesus Perez, Mexican descent, born in Lubbock, Texas. Twice given psychiatric treatment and eventually sent to the moon mines as an incorrigibile. Served four years of a five-year sentence."

"The case is tightening up," said Jones. "Warburton is from Lubbock, too. As though we needed that item of proof."

Howard said, "Yes, and there's something else. Southwestern District reports that Warburton has a record, too."

"He has? What for?"

Howard shook his head. "That is what I'm afraid we're not going to find out unless Warburton tells us himself. It was for something that happened while he was under-age. He was psyched, and discharged as cured of criminal tendencies, so the record comes under personal privacy. The people at Southwestern only found it out by accident. He hasn't any relatives there, and they were tracing general records at the city hall, when they found a closed-case card on him. By the way, there's no educational record for him beyond high school."

"What beats the hell out of me is this," said Swigart; "if this Perez was in on the rocket robbery, what did he do with the rest of the money? Beside what he spent, nine-fifty is an awful small dose to have left out of three million."

Howard said, "I have a theory that will furnish a partial answer to that. The first bill that turned up was a five hundred, in El Paso, thought to have come across the border from Mexico. I think we'll find that Mr. Jesus Perez has parents, or perhaps a sweetheart, south of the Border, and that he has passed part of the money over for safekeeping. At least, we're having the Mexican police check. I don't suppose he said anything about his contacts down that way?"

"Not a thing," said Swigart. "The only thing he was willing to talk about was the robbery. He said he had an alibi; that he was in Chicago the day it was pulled. We asked Chicago to check that, but I'll bet all the tobacco in Kentucky that it turns out to be right. He wouldn't have been so willing to come out with it unless it was air-tight."

"All right, then, what's the next step?" said Howard. "I take it you established those agency people were from the Owl, all right?"

"Oh, yes," said Swigart. "The two that were holding Jones didn't have time to make their getaway before the fire truck closed in, and the locals turned them in. They had to do some fast talking and show their identification to keep from being hooked on the false alarm rap. But the Owl wouldn't tell us who they were working for. Must be somebody with plenty on the ball, though. The Owl is usually pretty cooperative."

Jones said, "Would three million dollars be enough on the ball to make a difference? From the description, one of the men who ran out of that joint just as I got there could have been Warburton."

"Three million would fix you quite a few operatives, all right, but it would be peanuts for the agency as a whole. And it's the agency that's making the trouble," Swigart said.

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BY THE WAY, Jones, did you get enough of a look at the one you thought was Warburton to set up a classified description?" Howard asked.

Jones shook his head. "I wasn't near enough to get his ears or nose. I think his walk would fall in the JM-22 group, but he was running and I got only a short glimpse of him. I couldn't carry it any farther than that."

"All right," said Howard. "Now before we go any deeper into the matter of the Owl and who hired them, I'd like to get the Perez matter cleared up. You searched the place, Swigart. What did you get that might furnish a lead?"

"Practically nothing. No weapons, no tools, nothing we could put the bee on him for having except that money. We've got him booked for receiving stolen goods, but even that's weak. The only tie-up with the robbery, if it is one, is this." He laid a piece of paper on the desk.

Howard picked it up. "A receipt for the shipment of one box, special handling, from New York to San Francisco by rocket express, addressed to Juan Fernandez, 2303 Noriega St. Did you ask him about this?"

Swigart said, "Yes. It made him nervous, all right, but he didn't know anything about it. Said it must have been left in his room by the guy who had it before him."

"You noticed the date on it? The shipment must have been made on the rocket that was robbed, or the one before."

"I did that."

"What about Juan Fernandez?"

"I called Frisco myself on it. There isn't any Juan Fernandez at that address."

Jones said, "There's an angle I'd like to have you people consider. That entry at the Braunholzer Institute, and the disappearance of a batch of materials for duplicating a human, means there's something more than a strong probability that there is a duplicate of either Perez or Warburton wandering around somewhere. In fact, the existence of that plastic mask of the chemist at the Institute practically proves it. The use of the mask is the only way anyone could have gotten into the institute. I established that myself. Now, Warburton's a chemist, and could have operated the machine. Perez isn't. I think it was probably Perez who was duplicated. In that case, either the Perez with the alibi in Chicago, or Juan Fernandez, who received the box out in San Francisco, could be the duplicate. That would be a natural name for him to take."

"What is this other case?" asked Swigart.

Howard told him, and then said, "Let's see; was the original Perez, the one with the moon-mine record, right or left-handed? Right-handed. What about the one you have down there in the pokey?"

Swigart said, "He's right-handed, too."

"Then you have the original article. The one who showed up in 'Frisco as Juan Fernandez must be the left-handed twin." The executive wrinkled his forehead. "There's also the possibility that the bill in Mexico came from this left-handed Juan Fernandez. He'd have to be in for a cut of the dough, even though he's not strictly human—"

HE STOPPED suddenly, looking at Jones. The secret service man only smiled.

"Don't mind," he said. "My wife and I are both used to cracks like that. But I do think you're pushing the line of deduction pretty hard here. We don't know there was a Juan Fernandez in San Francisco, either Perez or his duplicate. And there isn't anything about the report of the arrival of the express rocket to indicate that there was any hocus-pocus at that end. In fact, it's hard to fit Perez into the picture at all, even though it does look as though Warburton duplicated him, and the time since the disappearance

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at the Braunholzer Institute is just about right for training the duplicate. All we have along that line is this shipment of the box. Warburton may have worked some kind of sleight-of-hand so the box held the money instead of the bag, though at the moment I don't just see how. Everything seems to come back to him."

Howard made a note. "And he's missing. Anybody got any ideas on turning him up?"

Jones rubbed his chin. "If we're right, and it's an arranged disappearance, it's going to be hard," he said. "I think there's one possibility, though. This whole thing shows long and careful planning; it was a year and a half ago that the business at the institute took place, and there must have been a planning stage even before that. To my mind, this means that Warburton must have been arranging a duplicate identity he could slip into at least that long ago. Right?"

There was a nodding of heads around the desk.

"Well," Jones went on, "then we have to put ourselves in his mind, and figure out how he would lose himself. I think anyone smart enough to have worked out this plan would also know there'd be a warning out for the bills, and would plan on not spending any of them for a long time."

"Seems plausible," said Howard.

"In fact, his visit to Perez looks as though he somehow got wind of the fact that Perez was spending some of the money, and he was trying to put a stop to it. But the main point is that he'd have to hide out some place where he could earn enough money to live on. Now, he's got two professions—bank clerk and electronic chemist. But banks check pretty closely on their employees. Chemical firms pay more, too. So I think we'll find him quietly working at some chemical plant, where he began building up an identity for himself a while back."

Howard said, "It would have to be fairly near here for him to have come calling on Perez. That narrows the field down considerably. You'd suggest covering the chemical firms?"

"I think there's an easier way than that. The American Chemical Society keeps a register of chemists at the research level because special jobs sometimes turn up. They can tell us what firms have hired an electronic chemist recently."

Howard shook his head. "I don't like it very well. These big industrial firms will do anything rather than produce their personnel records, and if we raid one of them and it turns out we've grabbed the wrong man, we'd be in a hell of a jam on both personal privacy and personal security."

"Won't do any harm to find out what we can, will it?" asked Swigart. "Let me try this society."

"Go ahead," said Howard. "It's about all we can do for the present about locating Warburton. Now let's take up the Di Paduano angle. How did your job of roping come out, Dewey?"

O'NEILL, who had been sitting silently, spread his hands. "Not a tumble. I picked up this guy Christy, we went to a bar together and then to a leg-show, and I gave him the old song and dance about how there'd be some dough in it if we could turn up Warburton. Hell, I might as well have been talking to one of them stone lions out front. It wasn't that he was clamming up, he just didn't know from nothing."

Jones said, "I think I can give you something on the Di Paduano angle."

"The hell you can!" said O'Neill. "What have you got that we ain't got on that?"

Jones told them about his deduction while sitting on the steps at 78th Street, waiting for Perez. "So it seems to me," he finished, "that the Owl must be working for Di Paduano. That would explain the dough behind the Owl. Or for someone connected with Di Pad-

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uano, who would answer to the description of 'some babe.' All we have to do is find the babe."

"Think you're smart, don't you?" said O'Neill, with a grin. "Well, here's one for you. I found her for you."

"What?"

O'Neill waved a hand. "I been hanging around that bank, see? Yesterday noon when I'm meeting my contact, out comes this dame built like a fire-engine; you know, the kind that has them chemical knobs out front. I looked at her long enough to classify her walk in case it might come in handy some time. I said to my contact how would he like to swap jobs so I could have something like that around when I got to feeling low. He says that ain't for me, that's the boss's daughter, Dolly Di Paduano."

There was a momentary silence. Then Jones said, "That would explain a lot, all right. One of our inconsistencies has been that Di Paduano, who stands to lose by the robbery, has been so uncooperative about trying to find Warburton. But if his daughter is mixed up with the guy—"

Howard nodded. "I agree. It could be that the two Di Paduanos are afraid that Warburton *is* mixed up in the robbery, but aren't sure and don't want to take any action until they find out. Or it could be they're afraid that Warburton innocently let loose some tip that made the robbery possible. Hell, it could be any kind of a hookup, but one thing's sure. We know how the Owl found out about the bills on Seventy-eighth Street even before we did. Di Paduano must have tipped them off."

O'Neill said, "Okay, we got it. What next?"

"I think the next thing is to make assignments," said Howard. "Swigart will try to trace Warburton through his connections. Dewey, better take Seventy-eighth Street; you haven't been seen there, and you can pick up any leads floating around about Warburton and Perez, especially about the getaway during the raid. George, I'm afraid I'll have to send you to 'Frisco. I'm not in the least satisfied with that Juan Fernandez angle." He looked at the three of them. "However, you can take the night plane and be comfortable. Somebody's got to see this Di Paduano girl, and since you're the Chesterfield of this bunch, I guess you're nominated."

VII

THE VOICE said Miss Di Paduano was not at home, but the visi-plate didn't go on, and Jones had enough experience with society people to be perfectly well aware that this meant she wasn't at home unless you could prove you weren't going to ask her embarrassing questions.

It would have to be a campaign, then. He wished he had Angela with him as he got into a taxi; having a wife who looked like a tri-di star was a great help when you wanted to get into some place under guise of making a social call. But the idea he needed still hadn't jelled when the cab wheeled to a stop where the East 30s meet the river behind a screen of African hedge intended to give the occupants of the monolithic buildings beyond the illusion that they were living in a park. The Di Paduano house would be the third one down, one of the detached units. They could afford to pay for privacy.

Jones paid off his taxi and turned toward it, deciding he would have to depend upon the inspiration of the moment. The number woven into the ornamental iron gate was 16; as he clicked it open and started up the path toward the monolith—

"Where y' going, Mac?"

Jones turned to face a man who had just stepped out of a watchman's kiosk inside the hedge, and in the same moment recognized the man as one of the pair who had tried to drag him up 78th Street the previous night. In a flash so swift that it had not time to be a conscious thought, inspiration reached him.

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"Going to give you a present," he said, and brought his left up from the waist.

It was no knockout. The Owl man staggered, snarled, and countered with a left of his own that showed he had had some boxing training. Not enough, though. Jones slipped the punch, crossed a right over it, and followed up with another terrific left to the pit of the stomach. The Owl man gave a grunt and sank to his knees. Before he could recover, Jones had a hammerlock on him and was whipping out a snake-wire to lock his wrists in position behind his back.

The man said thickly, "I'll put a personal security rap on you for this, you lousy Fed."

"Come along and get your lollipop," said Jones, jerking him into the kiosk. There was a phone in there, and a chair; he would have to take a chance on the Owl man's reaching the instrument somehow, but at least he could make it pretty difficult. A jerk brought the private eye into the chair; a couple more turns of snake-wire had him fixed firmly to its legs.

The Owl man said balefully, "You won't make it. I gotta give them the office from here."

"I'll take a chance on that," said Jones. He swung the door of the kiosk shut and started toward the house, hoping that the little encounter hadn't been seen. He hoped the Owl man had just been trying to upset him with the story about notice from the gate being needed to get in.

The building was one of those with a blank lower story, door set flush into the wall, and visi-plate flush into the door. When he pushed the bell the voice that answered was cold enough to have formed ice on the East River.

"Yes?"

"I'm from the Owl," said Jones, and rapidly flashed his identification past the plate, his hand held partly over it so she wouldn't see the "U.S."

"I'm afraid I can't—no, wait. Come in," said the voice, and the door swung open on an entry with a long-haired carpet and indirect lighting. The voice said, "On the left, please."

Jones went down the hall to where thick dark curtains hung on a door on the left. They parted at the bidding of an electric eye, and he found himself looking down into a sunken living-room which had been transformed into an Italian garden by the use of modeling in the recessed walls. The lighting had been arranged for that of a serene twilight. Out of the center of it, a voice that seemed to have the same quality as the light said, "Please sit down."

DOLLY DI PADUANO was not tall, but even in the low chair behind the low table, her dark face had a regal quality that seemed to make a crown of the mass of black hair. Jones felt awkward as he came down the two steps, crossed the room and took the chair opposite hers.

He said, "They sent me up from the office. One of our people has been pinched for obstructing an officer while doing his duty."

She remained as cool as before. "I am sorry to hear it, but I don't see why I should be concerned. Your people should be more careful."

Jones leaned forward. "Yeah, but he got there for helping your friend Warburton make a getaway. The boss thought that maybe your father could tell someone to have them lay off. It's the Feds."

She gave him a long level look. Then, without stirring from her position or losing her poise, she said, "You're not from the Owl. Who are you?"

Jones grinned, and abruptly changed his manner. He said, "My name is Jones, and I'm from the U.S. Secret Service." He flashed his identification again, visibly this time. "Frankly, we're very anxious to find Warburton and ask him a few questions, and we thought you might be able to help us."

"I see. You haven't any charge

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against Mr. Warburton." It was a statement, not a question.

"Not now, but he's disappeared, and there are several things we'd like to have him explain—including his connection with a man named Perez, who has been spending some of the money stolen from an express rocket."

"But that's assuming—" Her gaze shifted suddenly past his head and her tone of voice changed. "Look, why not have a drink with me, and talk this out?"

"I—"

"Please do." She leaned forward and touched his arm with a gesture of surprising warmth. "It won't take a minute." She was on her feet and through the curtain at the side of the room before he could stop her, and from behind it he heard a few words and the tinkle of glass.

In a moment she was back, in her manner a graciousness that contrasted strangely wth the way she had received him. "Look," she said, "I do know Wesley Warburton quite well, but it's silly to think that he would have anything to do with a robbery. It's just that he — You can put the tray on the table."

Jones glanced up to see a man approaching with the sedate gait of a butler, carrying a tray with a shaker and glasses. There was something—

"He's had some family troubles," said the girl, "and there are times when all of us want to get away from our families. I have myself . . . This is a specialty of the house. I mix them with dry ice."

She moved the shaker and poured as Jones watched the plume of carbon dioxide come from the mouth of the shaker. He reached for one of the glasses as she took the other, and sipped at the drink. He opened his mouth to say something when his fingers suddenly went dead and the glass slipped, spilling its remaining contents on the floor. He was caught in a frightful paralysis, and he realized that it hadn't been carbon dioxide in that drink, but paraethyl triazine.

She had it, too. Across the table, her head was still a trifle lowered to one side, as though she had tried to avoid the impact of the paralyzing gas when it hit her. Her fingers were still locked around the stem of the cocktail glass from which she had never intended to drink. And as Jones stared, mouth half open for the remark that had never been uttered, he remembered what it was he had noticed about the butler. It was something just a trifle unnatural about the features, invisible unless one looked for it carefully, that showed he was wearing a plastic mask.

Warburton—and it wasn't much comfort to sit there and figure out that his walk analyzed as a type JM 22-16-8.

A SMALL SNIFF of paraethyl triazine paralyzes the motor nerves for a good four hours. Long before it was over, Jones heard the phone ring insistently, then the clickover as a record was made; and then the doorbell began. If he could have smiled he would; a relief man had evidently come to replace the one he had left trussed at the gate and was trying to pass the word. Jones wondered if there weren't any servants in the house to find them, and decided there probably weren't; if the girl had Warburton in the place, she had probably arranged for them to be out. There was nothing to do but wait for the stuff to wear off. As the phone rang again, Jones settled himself philosophically to calculate the prime numbers as far as he could do it in his head.

The girl began to move first, unclasping her fingers from around the glass. Jones hoped she wouldn't make it soon enough to get away on him, but at the same moment, his jaws came together with a snap, aching; and then life began to flow from the center of him, out to the numbed extremities. As Dolly Di Paduano sank back in her chair, he stood up and produced his gun.

"Lady," he said, "I want you to get up and get away from that thing. I think it's mostly evaporated, but I'm not

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going to take any chances, because you and I are going to have a little talk."

"If you wish," she said, and stood up with cat-like grace. The cold mood was back. "May I get the records from the phone?"

"No," said Jones. "I'll get them myself later. Come over here."

He kept her in front of him until they had seated themselves in another corner of the Italian garden. Then he said, "I could arrest you, and I probably will. But you can save yourself a lot of trouble by telling me a few things. That was Warburton, wasn't it?"

"I haven't anything to say."

"All right, that wraps it up. You're under arrest."

SHE stood up indifferently and held out her hands as though expecting the snake-wire to be put on them. The door clicked, and Di Paduano came into the room. "Dolly!" he said. "Why didn't you answer? What's this?"

He was looking at Jones's gun. "This," said the Secret Service man, "is an arrest. Your daughter has just aided the escape of a suspected criminal by dosing me with paraethyl triazine."

The banker's face flushed. "If you think you can invade a private home like this—" he began, but his daughter took three quick steps to him and laid a hand on his arm.

"Don't, Father," she said. "It's true. I did it, and I'm glad I did it."

The banker put an arm around her, but he addressed Jones. "I think that we had better have a talk," he said. "Please sit down."

The perpetual twilight of the Italian garden was close around them. Di Paduano turned to Dolly. "Why did you do it?" he asked.

Two little red spots came into her cheeks, but her head was still held high. "Because I love him. Because he's my lover. You might as well know it right now; he spent the night here."

Jones said, "Warburton?"

"Yes. Wesley Warburton."

Di Paduano said, "I think you had better tell us about it, dear."

Her hands came up to her face. "I've been so afraid, and I didn't like that Perez, and—"

Jones interrupted, "Perez is in jail. He was spending some of the money from the rocket shipment. And we know he and Warburton both came from Lubbock."

Dolly said, "I know. He told me. But he wouldn't stop seeing Perez. He said Perez needed him, and it was just prejudice to be down on a man, and not fair, because he'd been in the mines for something he really didn't do at all."

"Mmmm," said Jones. "It seems to me that the record shows Perez was fairly guilty."

"I know," said the girl again. "But it was just like that business Wesley himself went through, about the heli."

"I don't know about that," said Jones.

"Oh, it was a long time ago, but Wesley told me, perfectly frankly, soon after we first met. One of the boys stole a heli and took some of the others for a ride and smashed it up. And it really wasn't fair; Wesley didn't know the heli belonged to someone else, but they sent him with all the others to be psyched. It was so unfair that he resisted the psych, and then they sent him to a social development school. Before he got out his parents died, and he couldn't go to college."

"I see," said Jones. The picture was becoming clearer in his mind—Wesley Warburton, embittered by what he considered the unjust treatment he had received from the government, determined to make the government pay him for it. Keeping in touch with Perez, the expert in armed robbery. Working out a plan over months and even years. Using his connection with Dolly Di Paduano. Jones decided he didn't like Warburton, a cold-blooded and rather repulsive character.

"Why did you help him to get away this morning? I only wanted to ask him some questions," he said.

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"But that was just the point! As soon as he saw you here, he knew that you'd probably hold him for questioning. He couldn't afford that. He said there was something so dreadful going on that a lot of people would suffer and maybe die, if he were even kept overnight, and he was the only one who could prevent it. I think it was because of Perez. Wesley had some influence over him, and was going to prevent his doing something. So he put that—that stuff in the cocktail shaker. He said it wouldn't hurt either of us, and it would give him a chance to prevent what Perez was going to do."

Thinking to himself that a woman in love will believe anything, Jones said, "Perez isn't going to do anything but count bars for a while." He swung to Di Paduano. "Did you know about all this?"

The banker looked lofty. "If you wish a statement for the record, I shall have to consult my lawyer."

"Damn it!" cried Jones. "If you want to play it that way, go call him up. In the meanwhile, I'm placing your daughter under arrest and taking her down to be questioned under the lights. I've got a charge of obstructing an officer against her, and I'll make it stick."

Di Paduano looked as though someone had asked him for a loan. "I resent your methods," he said, "and I shall make a complaint against them in due course. However, to avoid unpleasantness, I will tell you that when my daughter informed me that her fiancé was missing from both his home and the place where he was supposed to be employed, I retained the Owl agency to find him, with instructions to report to her. She seemed apprehensive over something this Perez person might do."

"Never occurred to you to ask the police, did it?" said Jones. "I suppose it was one of the Owl men who brought Warburton here last night?"

The girl nodded. "I told the Owl men about Wesley's knowing Perez when they first came, and they've been looking for him. They phoned me yesterday morning that they had found Perez, and then last night, Wesley went to see him. But the police raided the place, and Wesley had to go, so the Owl detective brought him here."

Then Di Paduano hadn't tipped the Owl off about the money. Jones grinned inwardly at the thought that he had reached the right result by the wrong deduction. He stood up and stepped over to the table. "Do you have a piece of flex plastic?" he said. "I'm going to take this tray with me."

"But why?" said the girl.

"Warburton handled it. I saw him. I'd like to have some record of his prints."

Dolly's face tightened a little, and Di Paduano said, "I don't think that carved silver will give you any recognizable prints."

"Don't want fingerprints. They're all right for you commercial people, but in police work we haven't used anything but pore prints for about fifteen years now. The pattern's just as specific for every individual, and you don't need a whole set, just a small section from almost any part of the body. But you have to have molecular dust and a microcamera to bring them out."

VIII

GEORGE JONES had to live through a good deal of kidding about being caught by paraethyl triazine. But he arranged for Warburton's pore prints and walk-description to be added to the dossier on him, and a lookout to be set for him, as wanted for questioning. There wasn't any basis for a charge against the elusive chemist as yet, so a general arrest warning couldn't be put out. Then he arranged for a tap to be put on Di Paduano's wire, and a tail on his daughter; that would make the banker sore, but he was sore already, so it didn't matter.

By that time, Dewey O'Neill was back with a report that he hadn't been

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able to pick up the Warburton trail on 78th Street, but that during the day before he was arrested, Perez had called in an expressman and shipped away a big trunk or box. Under personal privacy the express company declined to say, without a court's warrant, where he had shipped it. Howard would apply for one in the morning on the grounds that the trunk might have contained some of the missing money, but the prospects didn't look too good.

The night plane took only five hours to make the trip, but thank God, they let you sleep aboard until you were ready to get up. Jones stepped out onto the concrete of Oakland airport on a morning milky with fog, and asked for a heli taxi to take him to the landing ground of the rocket express, in the hills at San Ramon. There was a delay and a phone call to make sure that no rocket was due to take off or land immediately; contact with one would be bad for the heli taxi.

At the port itself, a busy official named Baker was glad that the government wasn't giving up on the rocket robbery. Of course, insurance covered most of the loss; "but you understand, Mr. Jones, it isn't the loss itself that disturbs us, half as much as how it took place. The success of our enterprise is built, in a sense, on the fact that we give absolute security to all shipments. Once anything is sealed in the rocket, it can't possibly be tampered with until it has been receipted for at the terminal. But now it has been tampered with. Speaking as an individual, I'd be willing to pay the three million to anyone who can tell us how it was done."

"Make me an offer," said Jones. "In the meanwhile, I suppose that all your people have been over this a dozen times, but I'd like to see the people who handled the shipments when the June sixth rocket arrived—not those who were to get the money, that's all been gone into, but those who handled the other shipments on the same rocket. Also, I'd like to know how the shipments are handled."

"That's easy enough," said Baker, and snapped up the screen from the wall. "See that hill over there, the one that looks as though something had been sliding down it? Well, something has; that's where the rockets came in. The main radar station at Grand Island, Nebraska, picks them up at Brennschluss, coaches them along to the stations at Nephi and Ely and then the homing station brings them in on this hillside. There isn't a chance of substituting another rocket for the one that starts out. You'd have to have powerful radar stations and a landing somewhere, and our own stations would register the difference in flight."

"I wasn't thinking of that," said Jones. "What I want to see is what happens to the shipments after the rocket is opened."

"I'm coming to that. The rockets come down the hill against a baffle which you can't see from here. We always have a truck with a crane waiting, because some of the shipments are pretty heavy. When there's a particularly valuable shipment aboard, there may be someone waiting to sign for it the moment the rocket is opened. If there isn't, the work crew puts everything into the truck and takes it to the warehouse building, back of this one. Everything has to be logged and registered before being delivered. But the bank people—"

"I'm not interested in the shipment for the moment," said Jones. "I'd like to talk to the crew that handles the log of deliveries."

"All right," said Baker, "let's go around. You don't mind walking?"

HE LED the way out of the office to a low building with a crane and loading platform at one end and a heli ramp and another loading platform at the other. Inside the loading platform was an office, where Baker introduced a muscular checker named Hinrich, and explained that Jones wanted to look at the records for the day of the robbery.

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"It may have been the rocket before or after the one that was robbed," said Jones, and produced the receipt for the shipment to Juan Fernandez. "I'd like to know who signed for this when it was delivered."

"AG-11-87-63," Hinrich read off. "That would be on the rocket that was hijacked, all right. I'll see." He snapped open the case containing the records, and began to turn the microfilm. "Here she is—signed for by the addressee. Came for it in person. No delivery."

"Remember anything about it?" asked Jones.

"No-o-o," said Hinrich, gazing at the record. "Wait a minute, though, that was that special handling parcel. Yes, I do remember now. We were supposed to deliver it, but he came for it instead. Sure I remember. He came in here while all the yak was going on about the money and put up a stink because he couldn't get his parcel right away."

"What did he look like?" asked Jones. "Would this be a picture of him?" He handed the checker identification photos of Perez.

Hinrich turned them around slowly, frowning as he gazed at the three-dimensional images. "No, this don't look anything like him. I never seen this guy before."

"You couldn't be mistaken?"

"Mister, I° certainly couldn't. There was so much going on that day that I remember practically everything, even what I had for lunch. This picture here looks like a real Mexican, see? But this Juan Fernandez that came for the parcel looked about as much like a Mexican as the King of Sweden. He was one of them lemon blonds, about middle size, and I remember wondering where he got the Mex name."

With a shock Jones realized that the description, while it eliminated Perez or his double, was a pretty good picture of Warburton.

He said, "Do you remember whether he was left-handed?"

"I wouldn't fool you, mister. That I never noticed." Hinrich shrugged.

"All right, what about the parcel? What was it like?"

Hinrich closed his eyes, frowning, and then said, "I ain't a hundred per cent on this, but I think it was a big thing, sort of like a coffin, but without any handles. Sorry I can't remember no better, but we handle a lot of parcels."

"You're doing all right. How did it happen you turned it over to him? Can anyone just walk in here and pick up a parcel that's supposed to be delivered?"

Baker said, "We're very careful—" and Hinrich, "I should say not! When a parcel is claimed here, instead of being delivered, we make them put up enough identification to get past St. Peter into Heaven. I don't remember what this guy had, but it must of been plenty good."

"The shipping address is two-four-oh-three Noriega Street. Would your identification go far enough to make certain he actually lived at that address?"

"With a name like Juan Fernandez? Don't make me laugh; half the Mexicans in California are named like that. I say I don't remember how I tied it up to the same guy, but I bet I did."

It occurred to Jones that some of this vehemence was for the benefit of the boss, but that didn't make any particular difference. It seemed fairly clear that Warburton had taken delivery on the box and that Perez had shipped it; but why?

Could it be that the money had been transferred from bag to box by some impossible system of teleportation? His mind played wildly with the thought as he took leave of Baker and got into a heli taxi for San Francisco. The next step was clear enough; it was to go to 2403 Noriega Street, where the police inquiry had been limited to establishing that no one named Juan Fernandez lived there. He wished he had a picture of Warburton, but the missing chemist had evidently taken particular care that there shouldn't be any. On the way to

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Noriega, it occurred to him to send a message to Washington to have government physiologists asked whether it was possible, by any system of bracings or injections, to protect a human body against an acceleration of 8g, and to have the same question put into an integrator. He took care of that detail first.

THE PLACE on Noriega turned out to be one of the featureless identical houses on the identical streets surrounding the Sunset Reservoir; a boarding house, by its appearance. The proprietor was a thin man with lustreless eyes, who had apparently let all his energy run out into the enormous mustache that flowed across his face. Nope, he didn't mind answering a coupla questions. Nope, nobody named Juan Fernandez ever lived there; the police had asked him that before. Nope, no one got mail there under that name.

Jones tried a description of Warburton, or as much of one as he could give. The boarding-house keeper put his head on one side. "Oh, him. Yeah, I remember him. Only stayed a short while. Then the other fellow came, and he left. Name of Wharton, or something like that."

"Would it be Warburton?"

"That's it. Funny thing about him. He had dinner sent up to his room, and he et enough for four people, I'm telling you. Then this other fellow came, and they were yelling at each other up in the room, and the next day he was gone. Left some kind of trunk behind him, too."

Jones produced the pictures of Perez again. "Would this be the other fellow?"

The man let his jaw drop open as he gazed. "Can't say for sure," he finally decided.

"All right. Have you still got that trunk he left behind? And can I see it?"

"I guess so."

The thin man solemnly led the way to a basement where an old-fashioned bulb light shed insufficient radiance on piles of junk, in the midst of which was an object that could equally well have borne the description of a trunk or a coffin—an oblong box, about three feet high, two and a half feet wide, and five feet long. There was a lock, broken; the lifted lid showed an interior lined with asbestos cloth over some kind of padding, through which projected a series of paired metal rings.

Jones gazed at it blankly, unable even to guess the purpose of this singular container. But that hardly mattered beside the fact that, after he had borrowed a molecular dust insufflator from the nearest police station, the microphotos of the lining showed that it bore the pore-prints, not only of Warburton, but also of Jesus Perez.

IX

"OUR CHIEF," said Jones, "always has us looking for contradictions—facts that will only add up to an impossibility. He says that a case in which there aren't any can be handled by an integrator, and the only reason for having a human detective on the job is that he can resolve problems where the machine would reject all proposals as having zero probability."

Case Executive Howard said, "And we have some contradictions here." It was a statement.

Jones said: "We don't have anything else. Perez couldn't have been in San Francisco at the time of the robbery, but the case is full of his pore-prints."

"That ain't no contradiction," said Dewey O'Neill. "He shipped the case, didn't he? He could of got the prints in there when he packed it, if he didn't travel in it himself."

"No, he couldn't do that," said Jones. "The box is too short, or too low, to hold a man. And the money couldn't have moved from the bag to the box during flight, but I'm convinced that's what happened, somehow. And we expect to find Perez, or his duplicate, using the name of Juan Fernandez; but it's Warburton who uses the name."

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"There's still another one," said Howard. "The reply to that request you sent Washington is back. The physiologists say it's absolutely impossible to rig up a man so he can stand 8g, and the integrator calculates the possibility at point oh-two per cent, which is a little less than nothing."

"I didn't expect much from that, anyway," said Jones. "But there's one other thing. That boarding-house keeper in 'Frisco couldn't identify Perez as the man who called on Warburton there and quarrelled with him, because he didn't see who it was. I think it must have been, though, and I suggest that we ask little Jesus, not for his alibi for the date of the robbery, but for the following week."

Howard frowned. "We can do that, but I want to point out that clearing up these back details of the case gets us exactly nowhere. What we need now is a foolproof method of finding Warburton. And we haven't even got a description of him."

"We have his walk," Jones pointed out. "I saw it myself. And we have the fact that he is almost certainly living somewhere under the name of Juan Fernandez. The identification he showed to get the box at San Ramon was good enough so that he must have spent some time building it up."

"That doesn't do us much good right now. We can't very well put out a nationwide alarm for all persons named Juan Fernandez, or for all those with JM 22-16-8 walks, either." He swung to Swigart. "What did you get on the lists of people who have hired electronic chemists recently?"

The city man made a face. "My contact got a list all right, but it's got about twenty names on it, and they're scattered across the country from hell to breakfast. And you know how those companies are; the minute you want a crack at their personnel records, they start yelling 'personal privacy' and 'industrial espionage' at you. Here's the list."

Howard took it. "It isn't much," he said, "but it's the best thing we have, and maybe we can parlay it into cracking the case. I see a line; each of you take one of these places and plant himself outside before they open up in the morning. Keep looking for someone going in with a JM 22=16=8 walk, until you're satisfied he's either there or he isn't. I wouldn't lay too much stress on Warburton's blondness; it's so distinctive that he'll probably have his hair done over, and I wouldn't be surprised to find that's why he took the name of Fernandez. Jones, I think you draw the first name—that's Seawater Chemical, of Portsmouth, New Hampshire."

THE PHONE rang.

"Who is it?" said Howard.

"Mr. Di Paduano calling," came the operator's brassy voice, and the next moment the banker's face flashed on the screen, distorted with emotion.

"My daughter's gone!" he said. "She's gone to join him!"

"Who—Warburton?" asked Howard.

"Yes. She left a note, saying that she had to make the choice some time, and had decided to make it now; and that though she might be unhappy with him, she'd be more so if she didn't follow her impulse."

"Do you want us to find her?" asked Howard.

"Yes."

"I am making that a matter of record."

"Go ahead. You have my permission. I don't want her disturbed; I just want to know that she's safe."

Jones said, "Can I get in the act for just a minute?" and as Howard motioned to him, took his place at the screen.

"Mr. Di Paduano," he said, "do you have anything to indicate where your daughter might have gone?"

"Not a thing," said the banker. "When I came home for lunch, she was simply gone, and left this note."

"None of the servants saw her go?"

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"We're mostly automatics and have only a butler and a cook at the town house."

"Did she take your car or heli?"

"No, neither one: not even her own car."

Jones said, "I think it would be a good idea if you checked up on what clothes are missing. We'll do our best for you. Also, we'll send somebody down to get any tri-dis or photos of her you can spare. Good-by."

As the banker's picture faded, he turned to the others. "It worked," he said. "Where's that list that Swigart got? Here, Howard, see? Chasing around to all those firms isn't going to be necessary; the place where Warburton is hiding out is right across the river at the Fairfield Reducing Company in Bayonne, New Jersey."

Swigart said, "How do you know?"

"Because I set this up by leaving a hole for it. When I came to from the paraethyl triazine, and began questioning that wench, she started out by being just as tight as the skin on an apple, and even proud of helping Warburton make his getaway. Then her father came in, and she got very co-operative. It was one of those contradictions I've been talking about. And the more she told her story about believing in Warburton's innocence, the less convincing it became. I began by thinking that he was putting one over on her; but the farther along I got, the more I began to see that she was putting one over on me. So I left her a couple of easy outs. I kept from asking whether she knew where Warburton was, or raising any discussion about him, to keep her papa from getting suspicious. I was pretty sure when she opened up that much, but held out the details, that she'd go right to him and lead us that way."

Howard said, "Good psychology. You Secret Service boys work it hard, don't you? But what makes you think of Bayonne?"

"The layout of that place of Di Paduano's," said Jones. "Look, she didn't take the car or the heli. We haven't any report from the tail that was sitting on the gate for her, so she didn't take a taxi and the normal exit. But I've cased the joint. If you walk a block and a half north along the river front, you come to the foot of Forty-second Street, and there's a water-scooter service there. I'll bet you the three million dollars against a piece of cheesecake that she took a waterscooter and went to Bayonne. It's the only place on Swigart's list she could reach that way."

Howard said, "No, it isn't. She could have gone to an airport, or anywhere."

"Nothing doing. The place where she's gone has to meet two requirements. Remember it has to be a place where Warburton could live a double life, establishing an identity as Juan Fernandez while operating in New York. So he had to get back and forth quickly. And now we know in addition that it has to be a place that can be reached by water from New York."

Howard gave him one glance, then picked up the phone and pushed a button. "Hello, Assignments?" he said. "Have someone get in touch with the man covering the fate of the Di Paduano house—I think it's Reichert. Tell him to go up to the house, get a photo of Dolly Di Paduano, which her father will give him, and take it to the water-scooter service at the foot of Forty-second Street. I want to know if she rented one this morning."

He turned to the others. "I don't think, with a bird who moves as fast as Warburton, it will pay to delay." He pressed another button. "Traffic? I want a heli with full raiding equipment prepared immediately. Four-place job. And put down a checkout for me on a raid to the Fairfield Reducing Company, in Bayonne, accompanied by O'Neill, Jones of Secret Service, and New York Detective Swigart."

THE Fairfield Reducing Company sprawled, but sprawled with a certain grace, across what had once been

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part of the Jersey flats, its low work-buildings facing the apartments for the executives across a wide heli landing platform. The receptionist was cool, and the big man in the office laid down his dicto-typo with an annoyed air as the four filed into his office. "What can I do for you, gentlemen?" he asked.

Howard flashed his identity. "We would like to ask a few questions about an electronic chemist you hired, probably in June."

"Our personnel records are closed."

Jones leaned forward. "We think his name is Juan Fernandez."

"Oh." The big man contemplated him for a moment.

Howard seized the opportunity. "Then he does work here! In that case, we won't bother you with any questions that might violate personal privacy. We just want to talk to him."

The big man favored them with another look, touched the intercom, and said, "If Mr. Fernandez isn't running an experiment, will you ask him to step into the office for a moment?"

They could all hear the voice at the other end of the line saying, "Mr. Fernandez got a phone call about an hour and a half ago, and said he was going to step over to his apartment. He hasn't come back yet."

"Where's the apartment?" asked Howard.

The big man said, "It's Number Six of those semi-detached buildings across the field. I hope you don't intend—"

"Haven't got time to discuss it," said Howard. "Come on, gang."

The buildings were in the so-called Brazilian style with aerated roofs that had come in about fifteen years before. Howard dispatched O'Neill and Swigart to cover the back and himself stepped under the overhang and up to the visiplate—which would have looked very strange on a real Brazilian house—to press the button.

There wasn't any answer.

Howard pressed again. There still wasn't any answer.

Jones said, "Damnit! If that slippery bastard has got away from us again, I'll turn in my badge."

Howard said, "I hope it hasn't got an electric guard, but I'll have to take the chance. Stand back." He produced his needle-gun, twisted it open, dropped the charges in his pocket, replaced them with a shaped-charge cartridge, stepped back a little, knelt to get on a level with the lock, and fired. There was a burst of flame and a *boom!* The door slammed open.

Jones whipped out his gas-gun and, Howard by his side, made for the aperture. There wasn't any light, but as soon as they had fumbled one on, they realized that their long search for Wesley Eustace Warburton was probably over, but it wasn't going to do them much good. The man who lay with his face pressed into the rubber-plastic floor covering was quite dead, the whole back of his head bashed in.

"He has dark hair," observed Jones, with mild interest, "but I'll bet it isn't permanent."

"Looks like you were right about the Di Paduano wench being tougher than she looks," said Howard. "Go through and let in O'Neill and Swigart, will you? I'm going back to the heli for dust and a camera."

Jones started down the hall to where three doors offered him a choice of routes. The one in the center was a closet; but that on the right led into a tiny dining-room with a gleaming kitchen beyond, and as soon as Jones opened it, he was aware that Dolly Di Paduano hadn't been so tough after all. She was lying in the kitchen, her head against a partly opened packing box which was leaking insulation, and she was quite as dead as Warburton, though not so messily.

Jones stepped to the door, noted that it was locked on the inside, and called to the other two. O'Neill whistled when he saw the body. "Boy-friend did her in, huh?" he said. "Looks like a windpipe job."

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"I would say so, yes," said Jones: "But it wasn't the boy-friend. He's in the front hall with a hole in his head. Get your guns ready. The doors were locked, so whoever did it must still be in the building. I'll take the lead. You cover me, Dewey, and Swigart come about three steps back."

HE STEPPED to the pantry and freezing-closet off the kitchen and flung it open. It was empty. So was the bedroom that had a separate entrance to the pantry. And the bathroom. And the closets. And the living room.

Dewey O'Neill pushed back his hat as they watched Howard taking microphotos of the area around the dead man. "I can't say I'm not relieved," he said. "I never did like gunfights anyway. But what the hell!"

"Must of got out a window," said Swigart, dusting away. "I think I'll put dust on them and see what we get."

"But why should he?" demanded Jones. "When there were perfectly good doors, and the windows only give on those alleys between the buildings. You'd think anyone in his right mind wouldn't want to take a chance on being seen getting out of a window."

"That ain't all," said O'Neill. "Who the hell done it? They couldn't of killed each other. This case is nuts."

Howard, pulling the rapidly developed prints from the back of the camera, said, "Those on the inside door-handle are Warburton's. Same as the ones on that silver tray you got, George."

"Yeah," said Swigart. "I got a look at the roots of his hair while I was dusting. They're blond. How long would you say he'd been gone?"

"Not over an hour and a half."

"That's about what I made it. Someone must have been waiting behind the door popped him as soon as he came over here he got that phone call."

Jones said, "Then get the button on the phone. It seems to me that whoever did it had probably already knocked Miss Paduano off, and the phone call was a decoy to bring him over here. Only—"

"Only what?" said Howard.

"Only there aren't enough people in this case to go round. Two of them are dead, and one's in jail, and they're the only ones who knew about the robbery."

"It rates as one of those impossibilities you were talking about," said Howard. "The prints on that phone button are different from Warburton's, all right. All right, let's try the kitchen. If that poor girl was strangled, there ought to be some prints on her throat."

He led the way into the other room, followed by Swigart with the insufflator.

O'Neill said, "How we going to get the money back now?"

Jones said, "I think we'll find that Warburton has it stashed away somewhere under the name of Fernandez. He was pretty careful about leaving loose ends around. Probably a safe-deposit box. We'll turn this joint inside out after we notify the local police."

Howard's camera snapped, he reached in the back and drew out the print. "By George, Dewey," he said in a funny voice.

"What have you got?"

"There are prints on the girl's throat, all right. But I've seen them before, and so have you. Look at them. They belong to Jesus Perez."

For ten seconds there was a silence of amazed faces and dropped jaws.

Jones said, "Get back!" and raced for the other side of the room, whipping out his gas-gun, and aiming it at the corner of the packing box, where it was spilling insulation. The shell hit it with a little *whuff!*

As though it had been a signal, the whole side of the box cracked open, something about the size of a terrier emerged, poised, and as Jones yelled, "Shoot!" launched itself at Swigart's head. Swigart fired and missed it in midair. O'Neill fired twice and there was a burst of flame from inside the box as Jones flung himself on what

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seemed to be a midget which was clinging with its legs around Swigart's neck and striking at him with a blackjack. The two went down across a chair with a crash. The midget was unbelievably strong; Jones could not drag it loose, but O'Neill got his gun against its head and pulled the trigger.

Swigart sat on the floor, one hand to his head, and Howard and O'Neill bent over the creature the latter had killed. About two feet high, dressed in something loosely belted around its middle, but with arms bare, it had the muscles of a vestpocket Hercules and the features of a man of about thirty.

"What is that little horror?" asked Howard.

"That," said Jones, "is one of the duplicates of Jesus Perez. There's another one half out of the box, where O'Neill shot it, and I think you'll find the third inside."

X

"IT WAS like this," said Jones, lifting his glass and squinting through it at the azure bar-lights of the Caverne Bleu. "The square-cube law was responsible for the whole business."

"Why don't they repeal it, then?" said O'Neill.

"That would be difficult," said Jones. "It's international. Warburton was just smart enough to figure out how to use it to do something that couldn't be done, but not smart enough to escape the consequences of what he did."

"I have a vague idea—" said Howard.

Jones sipped and raised a hand. "The square-cube law goes roughly something like this: as you increase the size, or mass, of an animal by the cube of its previous figure, its strength only goes up to the square. A man thirty feet high would be almost too weak to walk around; that is, if he had the same proportions. On the other hand very small animals, like a mouse or a marmoset, are prodigiously strong for their size, and when you get down to an ant, it can walk around with a load of ten or twenty times its own weight. Try lifting fifteen hundred pounds some time."

"You could do it one pound at a time," said O'Neill.

"Shut up. The small ones are on the right end of the square-cube law. That's the fact Warburton used to steal the money shipment from the rocket. The first thing he needed was someone with incorrigible criminal tendencies, like Perez. He got into the Braunholzer Institute and put Perez in the reproducer; but he didn't just make another Perez. He made three, each a third of Perez' size. That reminds me, I must go up there and find out if Dick Mansfeld knows how it was worked. I'll bet it was a new technique Warburton worked out for himself."

"He isn't in a position to tell us," remarked Howard.

Jones went on, "Anyway, when Warburton got through with the reproducer, he had three two-foot Perezes on his hands, left-handed, physically powerful—did you see how that one came right across the room at Swigart in a single jump?—and with inherent criminal tendencies. It took the pair of them about a year or so to educate their midgets and locate the right money shipment. Then Perez shipped the midgets to Juan Fernandez in that box. Warburton, who had already established the identity, was on hand to meet it. The box held the three little duplicates of Perez when it started; when it arrived, it held them—plus the money. They simply climbed out and took it from the bag."

"I thought the acceleration would kill anyone," said Howard.

"The acceleration was 8g," said Jones. "It would kill a full-sized man. But the midgets gained strength by losing size. The 8g of the rocket would only affect them the way 1½g would affect us."

"Then the money was aboard the rocket all the time," said Howard. "That is, up to the time Warburton's box was taken off. But why didn't he do away

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with those little nightmares?"

Jones said, "I don't know for certain, but I think Warburton did try to get rid of them in San Francisco, at the Noriega Street place. Either they got out of their box—the lock was broken—or Perez got there too quickly and prevented it. They had some kind of quarrel and left separately. I imagine they quarreled over the division of the money, too. That was what meant the end of Warburton in the long run."

"How do you mean?" said Howard.

"It's easy enough to figure out what happened. We know Warburton went to see Perez in New York—probably to get him out of the country, or make him stop spending the stolen money or something. We broke that up, but before we did, Perez must have shipped his little companions to Warburton, with instructions to do him in. It's easy enough to reconstruct what happened in that kitchen. The Di Paduano girl arrived, called Warburton at his office—those were her prints on the phone button—and then either got curious about that box, or else the little Perezes acted on their own initiative against her before taking on Warburton."

Swigart said, "What made him pick the name of Juan Fernandez?"

"That's another thing we don't know positively," said Jones, "but I rather think he didn't trust Perez much. He chose the name so that if anyone did get on the trail, they'd take it as an alias for Perez, just as we did at first. Mr. Warburton didn't leave much to chance."

"Except his love-life," said Howard.

"Yes," agreed Jones. "Only he didn't even really leave that to chance. I imagine he was going to drop Dolly Di Paduano out of the picture until the Owl men found him by tracing him through Perez. But after the Owl man found him with Perez on Seventy-eighth Street, he was quick enough to see that if he tried to get away, he'd probably be followed. So he took the chance on going down to Di Paduano's. He found the girl surprisingly co-operative—and she paid for it with her life."

"That's what happens when you get mixed up with dames," said O'Neill, inconsequentially. "But give us the dope, old master. What tipped you off about those three guys in the box?"

"Has to be that way," said Jones. "Perez is in jail, but there were his pore-prints. If we'd been looking for fingerprints, they'd have been in reverse, but the pore pattern is symmetrical. I thought of a duplicate Perez early in the game, remember. But there didn't seem to be any trace of one. Then I remembered something else. Asbestos cloth is awfully peculiar material to use for packing; too expensive for one thing. But that box out in San Francisco was lined with it, and it was also full of Perez prints. Here we had another box with asbestos and Perez prints around. They had to be connected. And then I remembered the square-cube law."

IN OUR NEXT ISSUE

Roll Back the Veil of Time and See the Conquest of the Incas in—

LORDS OF THE MORNING

***A Brilliant Novel by* EDMOND HAMILTON**

and

Share the Fabulous Adventure of the Human Duplicates in—

CHOLWELL'S CHICKENS

***A Novelet by* JACK VANCE**

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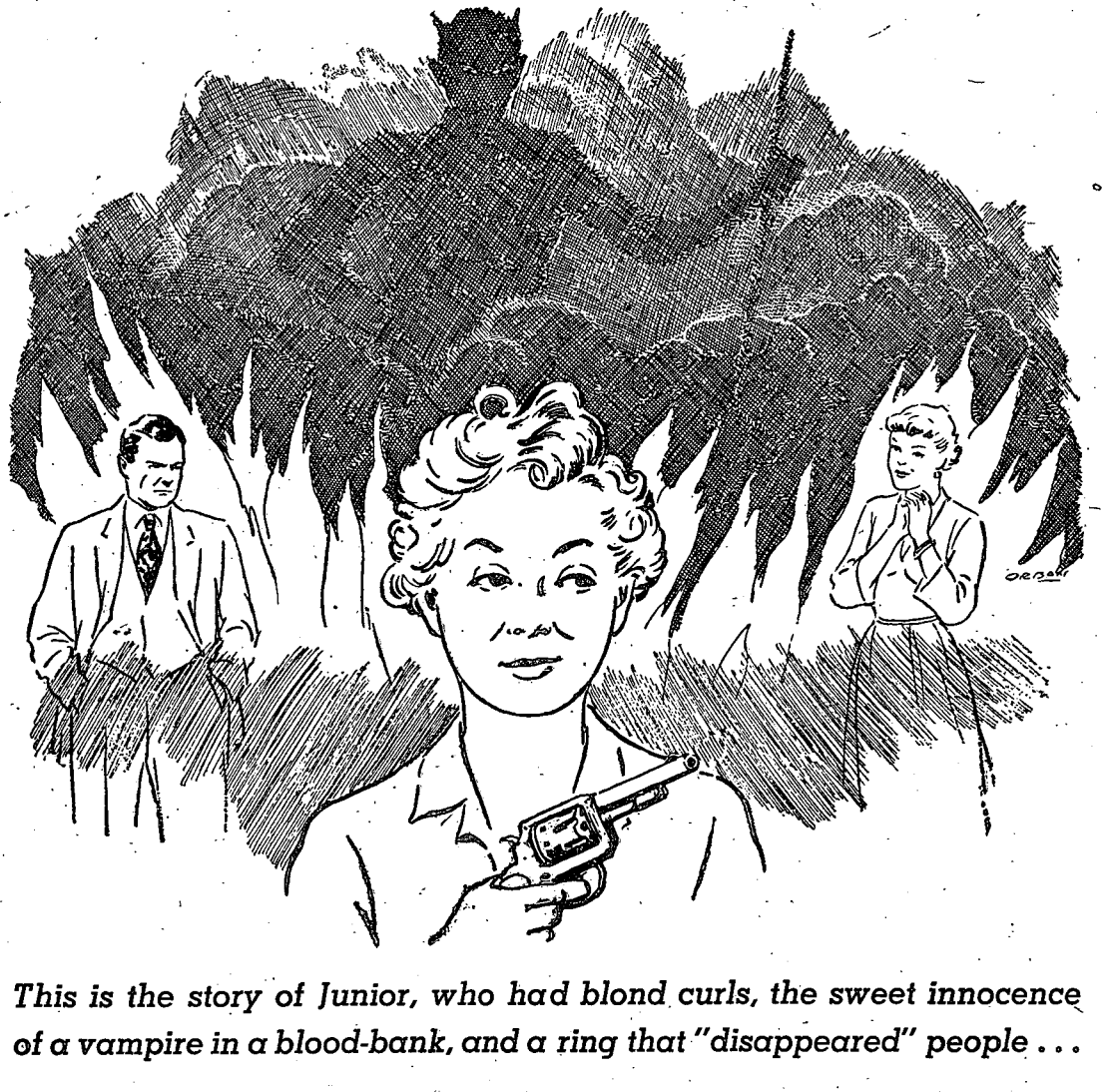

This is the story of Junior, who had blond curls, the sweet innocence of a vampire in a blood-bank, and a ring that "disappeared" people . . .

Such an Angel

By R. J. McGREGOR

JUNIOR QUADE was seven years old and he had long yellow curls and he lived at 1313 Church street and everybody in town knew it. Because he was a hero.

A week ago he had been just another neighborhood kid. But not now. Not since last Monday night when that burglar, Gimpy Gooley, had tried to burgle Junior's house when Mommy and Daddy were at Blanche and Joe's house and Junior had been playing *Hopalong Cas-*

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sidy with Daddy's big revolver.

Last Tuesday Junior had been pictured and featured and headlined in the *Daily Chronicle,* wearing his Hopalong suit and holding Daddy's gun—the fatal weapon.

He still didn't like the way fat old Homicide Lt. Donaldson had looked down on little him at police headquarters and had shaken his fat old head and had bellowed:

"Six .45 slugs in the gizzard. Imagine a nine-year-old kid blasting a burglar like that. One shot I can understand. But six!"

Junior could understand. It had been fun. And fat old Lt. Donaldson was a dumb cop and he, Junior, was a modest hero and Mommy loved him even if Daddy did act skittery.

Right now Mommy was upstairs entertaining nice, shiny-haired young Mr. Jaimeson, while Daddy was away at work. Mr. Jaimeson was very nice. He gave Junior quarters, and lately, half dollars.

Now Junior climbed the stairs as quiet as the cat and he pushed his yellow curls aside and put his ear to the keyhole.

"But, darling, it's murder," Mommy was saying to nice Mr. Jaimeson.

"So we take a small chance," said Mr. Jaimeson. "Double indemnity for an accident and we're rich."

It was quiet in there for a few seconds and then Mommy said:

"I really hate to kill my husband. But you're so much nicer, Jaimey. You plan it out and we'll kill him. . . ."

Junior went down the stairs, thoughtfully.

OUT IN the kitchen he saw that Mommy had bought him six more boxes of TWEETIES and four more boxes of GOODIES. The cereals inside tasted lousy, but for boxtops you could send away and get wonderful stuff. Secret Code Rings; Atom Ray Guns, like in *Flash Gordon;* Death Ray Guns. The kind of toys kids just love.

The trouble was, all that stuff was make-believe. The guns wouldn't shoot and the death ray rings wouldn't kill even a bug—Junior had experimented.

He climbed high up, using drawers and the open cupboard shelves as a ladder, and he reached into Mommy's secret oatmeal box which was on the top shelf and just full of coins.

His small hand reached in and grabbed and brought out big gobs of silver change and then he carefully hid his small theft and climbed down and got aboard his tricycle and zoomed away on the sidewalk for some drugstore lollypops and ice cream cones. Maybe, if he got the chance, he could wander into some grocery and rip off some TWEETIES box tops and sneak away like before. Anyway he was happy.

Until he saw the big boy blocking his path.

The big boy was maybe eleven and too big to lick with fists. He had a butch haircut and a fat, mean face, and he wore a turtleneck sweater and blue jeans and he stood smack in the middle of the sidewalk, glaring at Junior.

"Where yuh think yer going, Goldilocks?" he demanded.

Junior brushed back his long yellow curls, which Mommy loved so much, and surveyed his advancing foe. He backpedaled his tricycle quickly and reached into his rear pocket for a marble and his slingshot and then he pulled back and let fly.

Z-i-n-g! The marble, a pretty cloud-green one, hissed through the air and smacked the big boy in the neck and the big boy sat down and started to cry.

"Next time I'll kill yuh," said Junior, picking up his marble.

But the big boy got up fast and he grabbed Junior's tricycle by the handlebars and he jerked it upside down and Junior landed with his little bottom on the cement.

He didn't make a sound.

He only wished his *Hopalong* gun was real, instead of make-believe. And then

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the big boy crashed on top of him, trying to pin his arms down.

Junior squirmed and rolled over, protecting his right arm, carefully watching the raging, tear-filled face of the bully straddling him. The bully had his chin thrust out and his throat exposed. Junior had read about judo and throats. His tensed right hand darted up and jabbed into the bully's Adam's apple and the bully yelped and rolled off. Then Junior kneed him hard in the groin and while he lay there groaning, Junior stabbed the bully's eyes with both thumbs and bit his left ear till it bled red and salty. And then Junior got up and kicked out two of his front teeth

and rode away from his screaming victim, feeling much better.

IT WAS funny—down in the next block on this side of the street was a brand new grocery store with pretty signs and big windows and everything. *This morning the grocery store hadn't been there.* But Junior realized how fast they make buildings nowadays. He rode inside and carefully parked his tricycle by the ice cream box and he looked around.

"Nifty!" he said.

Every single thing in the store looked almost familiar—but somehow different.

There wasn't anybody else in the store, except the clerk—a thin-faced man dressed in a black apron. The clerk came over. "And what can I do for you, young man?" he smiled.

"What flavors ice cream you got?"

"All flavors," said the clerk.

"Any bubble gum?"

"Plenty."

"How about cereals?" asked Junior.

The clerk looked puzzled.

"Breakfast cereals," said Junior.

"Oh—those!" The clerk led the way. He pointed to the wellstocked shelves. "Pick yore brand, pardner," he said.

It was wonderful. Junior had never seen so many brands of breakfast foods, and none of the brands were familiar. They were packaged in black and red and yellow boxes. And so very many kinds.

JUNIOR selected a box labeled ARSENIX and looked it over, reading the give-away blurb on the wide side.

He looked up at the clerk, frowning.

"This cereal company is plenty dumb," he said. "Who ever heard of ARSENIX? And this cowboy on the side looks a little like *Hopalong,* only he's spelled wrong. Who ever heard of *Clopalong Hassidy?*"

"Clopalong's real," said the clerk. "Kills lots of people. I know him personally."

"Stop humoring me like I was a dumb kid!" Junior snapped.

He stared at the blurb. It said that inside was a genuine Death Ray Ring, guaranteed to kill people or anything.

"Lemme see," Junior piped. He ripped open the cereal box and dumped out the crummy contents till he found the little black ring. It just fitted his middle finger and in front it had a shiny cone-shaped barrel with a lens on top. And inside was a tiny pinhead push-button.

The clerk stood by, rubbing his thin hands together.

"It's guaranteed," he said. "Just point it at somebody you don't like and squeeze your fist tight and they will disappear forever. It's the latest thing for kids."

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Junior said: "You think I'm stupid or something?"

"But it really works," the clerk insisted. "Our customers never complain because our company guarantees everything forever."

"Okay," said Junior. "I don't like you."

He pointed the ring and squeezed his fist tight. There was no noise from the ring. No dazzling ray, like in *Flash Gordon*. No anything. But the clerk screamed and then he just disappeared forever. No messy blood. No body for the cops to get nosey about. Very nice.

Junior shrugged and glanced out front. Apparently nobody had heard the scream, and nobody was in sight, so he went over and took all the ice cream and candy and bubble gum he could cram into a big black shopping bag, and then he got aboard his tricycle and rode outside. From the sidewalk he pointed the ring, and he pretended it was a death ray for grocery stores, and when he squeezed his little fist the store just vanished and left a vacant lot—like this morning.

It was a fine ring.

HE TRICYCLED homeward, licking one of the ice cream bars, which was super-delicious, and he wished he'd remembered to steal a few of those boxes of ARSENIX before he'd disappeared the store. But he forgot the store when he saw that same, big bully, limping slowly and painfully ahead of him down the sidewalk.

Junior pedaled up behind to a nice, can't-miss distance, and then he balled up his little ring hand into a fist and watched carefully as the bully evaporated forever. No sound, nothing. One second the bully had been there, and the next he was just gone.

A lovely ring.

Junior pedaled on home and nice Mr. Jaimeson and Mommy were now down in the living room having cold drinks and nice Mr. Jaimeson gave him half a dollar. And patted his pretty curls and called him a nice boy. Which was all right for half a buck.

Mommy acted a little nervous, like she had lately, but Junior didn't mind because lately she hadn't even noticed things like his big black bag of goodies, and the money missing from the kitchen oatmeal box.

He ate up all the ice cream and as much candy as he could, and then he went out in the back yard and buried what was left, all but some bubble gum. He set up a piece of the gum on the picket fence like a bottle target and the ring disappeared it. It was so easy. He experimented with Daddy's favorite rose bush, and it went away, too. Then the cat. The cat made an awful racket, and it scratched his ring finger, but it went.

Next door the little girl named Mabel called to him. She was ten and dumb and almost bald-headed. Junior licked the cat-scratch and it stopped bleeding. He went over, and when Mabel invited him into the house, her mommy and daddy kept looking at him and somehow they seemed scared.

He smiled and said "Hi" and he and Mabel played house a while, and they both chewed and popped his bubble gum because Junior knew that was how normal kids ought to act.

Mabel's mommy kept looking at him and finally she said:

"Junior, did you *really* shoot that burglar last week. All by yourself?" She seemed to shudder.

Junior put down Mabel's blocks with his ring hand.

"I was only playing make-believe like *Hopalong*," he lisped. Then he started piling up the blocks again.

"He's a little monster. A little devil," said Mabel's daddy, and Junior heard it but pretended he didn't.

AFTER A while Junior heard nice Mr. Jaimeson's car driving away and he ran home to Mommy because soon Daddy would come home for dinner, like he always did after nice Mr. Jaimeson

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went away.

He went in the back door very, very quietly because he could hear their voices and it was always fun to hear pretty women talking. Especially since it was Mommy and Blanche. Blanche was Mommy's girl friend who was married to Daddy's poker-playing, no-good friend, Joe.

"That Joe," Blanche was saying. "If I never see him again it's too soon. Honestly. Wanting to know where I am all the time as if I wasn't faithful or something." She giggled. "Uh—how are you and Jaimey?"

Mommy said: "Listen, you don't know about that—understand?" She said it quick and not very nice, which was the way Mommy always talked to Daddy, but not to Blanche.

"I'm no prude," Blanche said. "Maybe we're in the same boat. Husbands. You can't get along without their money—but, oh, brother!"

"I know what you mean," said Mommy.

The women quit talking a moment and Junior silently slid his small ear down to the threshold between the kitchen and dining room, while the women only clattered their teacups. Down here he could hear better.

"I've been dying to tell you," Blanche said. "I've got a friend, too. He's tall and dark and handsome and when I compare him with my droopy Joe, well, honestly—"

"A woman's got a right to her own life," said Mommy. "After all, we're not slaves."

"Sometimes I wish Joe would die," said Blanche. "He's drunk again. Told me he's coming over tonight to play cards with your ball and chain."

"Is your Joe insured?" Mommy said quickly.

"Are you kidding?" Blanche cried. "If my Joe kicks off you don't think I'm going back to stripping at the *Bijou*. I'm no fool."

"Then listen—" said Mommy. She started whispering so low Junior couldn't hear. Not till Blanche clapped her hands and cried:

"Why, darling! What a perfectly horribly beautiful idea!"

JUNIOR SNEAKED away, thinking. He knew how Mommy felt about Daddy. Daddy *was* a jerk, always going around yelling and turning down the radio and shutting off *Hopalong*, and going out with 'the boys' and drinking and leaving poor Mommy all alone, except for Junior—and nice Mr. Jaimeson.

Mr. Jaimeson would be a nice new daddy. Junior thought it over. A new daddy always good for a four-bit touch. Always smiling. And always nice to poor Mommy. It would be nice. No more spankings.

And so, as it was getting dark, Junior went out in the front street and watched for Daddy to come driving home. A couple of times he thought the headlights coming were Daddy's car, but they weren't. And then they were. Daddy. No other cars around. Junior stood in the middle of the street with his little left hand held up like a traffic cop and Daddy's car had to stop. Daddy stuck his head out the car window and hollered at him and then Junior squeezed his ring fist; very carefully.

No more Daddy. No more car.

Junior looked around at all the other houses. It was pretty dark now and nobody had seen it. Or if anybody had, they wouldn't believe it. And he knew just exactly what the police would think. Poor Mommy would be so sad and sorry and crying and the police would be looking for Daddy, who must have run away in the car. The dumb cops would look for Daddy and Daddy's car and they'd look and look.

He wondered how long was forever. . . .

He walked slowly back up the front steps and went in the big door and Mommy gave him some cold milk and Blanche petted his pretty golden curls.

"Such lovely curls. Such an angel," said Blanche.

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Junior beamed and drank his milk, like growing little boys should. For a moment he thought about poor Mommy. Now she was a widow-woman and would have to get married to nice Mr. Jaimeson.

Mommy poured more tea for Blanche.

"Junior's so clever," Mommy was saying. "Really. Why, he could talk like a politician at ten months. And walk, too. I think he's read every book in this house—I have to keep hiding my French novels—and he's only seven years old. Imagine!"

Blanche made some cooing noises and patted Junior some more.

"He's a little genius," she said. "Someday he'll grow up and be a great, important man. Maybe President."

"He might, at that, Blanche," said Mommy. "He's so sensible. And so completely unspoiled. And so brave!" Mommy made her eyes big. "Why, that burglar last week—*think* what Junior did, just to protect us. And he's such an *infant* he doesn't realize it was—like it was. I think he's already forgotten it. So well adjusted—"

Junior beamed and drank some more milk and then curled up in Blanche's lap, and she was very soft and comfortable.

Pretty soon Mommy said: "That no-good husband of mine. Late again. Oh, well, what can you expect?"

"I know how it is," said Blanche.

Junior looked up with his most angelic smile.

"Mommy," he piped, "if Daddy doesn't get home by dinnertime, can we eat at the restaurant and then all see the movie at the Rex?"

"I hear it's a good show," said Blanche. "A murder mystery."

"See?" Mommy cried. "See how he can read my mind? Sometimes it scares me." She smiled down at him. "It's a lovely idea. We'll all go."

Then someone banged loud at the front door and Mommy ran and peeked through the curtains. She looked back. "It's your Joe," she hissed.

"Bring him in and let him pass out on the spare bed," Blanche said brightly. "I'll fix him a drink."

"Fix it good," Mommy said, letting no-good Joe in. Junior watched beside Blanche. Joe seemed to be feeling especially bad tonight. As usual he couldn't walk straight. And he smelled bad. But Mommy let him into the spare bedroom and flopped him down.

"Wheresh—yer husbun?" said Joe. "He'sh m'pal. Gonna have a li'l game here—"

"That's all right, Joe," Mommy said.

BLANCHE poured a drink that smelled just like Joe. And she dropped in six tiny yellow things like candy. They slowly disappeared in the drink and Blanche took it in to Joe. Junior could hear him slurping it down.

Mommy came in and shook hands with Blanche.

"Six should hold him," Blanche said.

"Like Rip Van Winkle," Mommy smiled.

Then she saw Junior's clothes. She took him by the arm to the bathroom. He did not protest even when she washed behind his ears and dressed him up clean. But he didn't like it when she took the ring off and dabbed iodine on the cat scratches.

"I told you not to play with that cat," she said. "Now you can't wear the ring till the scratch heals and I'll have to keep it for you."

"It's mine," he snarled, grabbing it back.

"Then put it away. And hurry," she said.

Junior frowned a moment, considering the aspects. After all, Mommy might want to wear it if she knew what it could do. And lately, she *never* went in Daddy's bedroom. So he said:

"Yes, Mommy." And he scampered as fast as his fat little legs could carry him into Daddy's bedroom. And he buried it under Daddy's soft pillow where it would be very, very safe.

Coming out, he found Mommy and

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Blanche gulping down pretty little glasses of that same stinky whiskey stuff that smelled like Joe and Daddy. Then they each popped half a dozen green tablets into their pretty red mouths and ate them.

"Wonderful stuff, chlorophyll," said Blanche. "No breaths anymore. And we can hold our liquor."

"Pour me another," said Mommy.

"Better not overdo it," warned Blanche. And Mommy agreed.

So they went walking. The long way around. Slowly, with Mommy and Blanche each holding Junior's hands part of the time. They ate at the restaurant. And then they walked, faster, to the Rex. And in the lobby they waited till nice Mr. Jaimeson came. He had two chocolate bars for Junior. But no money. It was nice and dark and cool in the movie, and comfortable curled up on Blanche's soft lap.

And it was a fine picture, except that the bad man didn't kill but three people. Mommy and nice Mr. Jaimeson kept whispering. And Junior had good ears. But he didn't understand—yet. Things like Mr. Jaimeson's saying: "Blanche's Joe. He's in there and he's out."

And Mommy saying: "Fine. How about mine?"

"That bothers me. Didn't show."

"He will. Stagger in and flop about ten as usual. Didn't bother coming home for supper. That'll make him even soggier."

"What if he doesn't?"

"Stop worrying. I know him," Mommy whispered.

"Well, my part's done," nice Mr. Jaimeson sighed. "I've studied these things. They'll blame wiring."

Then Mommy squeezed the nice man's hand. "You're sweet. I'm so proud of you," she murmured.

They watched the picture till everybody was dead. Except the handsomest man and the prettiest lady, who kissed each other. And walked off into a sunset.

Junior waved goodbye to Mr. Jaimeson and walked toward home with the women, who kept talking in high-pitched, funny voices. And laughing and chittering like sparrows. And the closer home they got the faster they walked. Then Mommy pointed. "Oh, could that be a house burning?"

"Your neighborhood," Blanche said.

"Oh, dear," cried Mommy, sounding happy.

SHE SCOOPED Junior up and ran with her funny little woman's steps. And breathing her smothering bosom against him. Till he kicked her hard in the soft tummy and squirmed loose.

Already there was a crowd around Junior's house. And the shiny red firetrucks whooshing white, whiskery water like from giant water pistols. All those red lights. And bells clanging. Women screaming. The big angry flames gushing up and spitting back at the water. Blazing up from the kitchen in back and up through the second story and the roof. It hadn't got to Junior's upper room yet, or to Daddy's front room upstairs. But it made the windows glow like angry cat's-eyes.

And here came a big white-and-black police car, howling like in the movie. And out of it climbed fat old Lt. Donaldson. Junior glared. The dumb cop!

Junior backed away, unnoticed, as Mommy and Blanche wrung their hands and cried and clung, comforting one another on the lawn. There was a fine-looking fireman with an ax chopping the door. It fell in and disappeared, which reminded Junior—*his ring*.

Another car dashed up. It said *Daily Chronicle* on the door in pretty gold letters, and two men leaped out of it.

"Any human-interest angles?" one asked Lt. Donaldson.

Junior made a face. He saw the fireman go into the living room dragging the hose. And he had an idea.

"Daddy's room!" he screamed. Adding, untruthfully, "I saw him!"

"Oh, no!" Mommy groaned. But nobody else had noticed him. So he

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screamed louder. Even this was no good. So he ran up and he kicked Donaldson in the seat of the pants.

The policeman spun around.

"Daddy's room. Daddy, Daddy!" he howled. And that did it. The big cop had not only noticed him but was scowling down and mouthing silent words.

Junior scampered around the cop and up the front steps. There he stopped. A firehose gushed him against the wall, like a giant white needlepoint shower, then went away. It made him suddenly shivery. But it felt nice in the heat.

He could hear the voices shouting.

Donaldson's voice: "Come back, you brat! You'll be killed!" And the skinny reporter yelling at the cop: "He's only trying to save his father. Bravest thing I've ever seen." And Mommy, screaming: "Don't just stand there, you big coward. Rescue my baby!" Everybody milling around.

Fine. Now he would have help.

Other voices: "Why, he's the kid who shot that burglar last week." And: "After him! Save that brave child!"

Junior screamed, "Daddy," again. Now he saw the reporter's flash-bulbs winking at him.

A big breath. Squint his eyes. Here came Donaldson! He ran. In the door toward Daddy's room. It was like Mommy's oven when a cake burned up. But in Daddy's room it was okay with the door locked, except dark. And the lights wouldn't work, and Donaldson was booming at the door.

Junior crawled across Daddy's bed and he reached under the pillow. He felt it! He slipped the ring on. Donaldson still banging, splintering, and then the door crashed down and the big cop was framed in firelight.

"Junior!" the cop shouted.

"Stay out or I'll blast ya!"

"You little devil—"

Junior knelt behind Daddy's bed and very carefully started to squeeze. He waited till the fireman, too, was inside. Then he disappeared them.

"Dumb cop," he hissed.

HE WENT to the front window and opened it and climbed up and kicked out the screen. He could see Mommy, Blanche and Mr. Jamieson out there.

Junior knew now. The talk in the movie. And the talk in the upstairs bedroom today. And the women at teatime. All just to disappear Daddy and Joe—without consulting Junior. Even trying to burn up his ring.

They would have been very frightened if they could have seen the look on Junior's face. He dropped back to the floor. Mommy, Blanche, and Mr. Jamieson—the jerks! He snarled and squeezed and they went away. Now, he thought, he was an orphan-boy, like in the sad stories. And nobody loved him. It was very smoking and hot now. He started to cry. He felt the tap on his shoulder and he turned around. There was a man in Daddy's bedroom.

"Give it back," the man said.

"You lied," Junior screamed. "In the grocery store I disappeared you. You said forever!"

"The clerk *is* gone forever. And that makes you a traitor. But *I'm* here."

"No," said Junior. The man looked just like the other man in the black apron in the disappeared grocery store. Except this man had short, neat horns curling out of his forehead. And a long, snaky tail that swished. A tail with a sizzling pitchfork thing on the end.

"People—yes," the man said mildly. "But you can't disappear our clerks." The man held out his hand. "Give it back."

"I'll disappear you, too!" cried Junior, balling up his fist.

The man smiled unpleasantly. The ring wouldn't work. Junior squeezed harder. He stamped his foot.

"You don't understand," the man said. "I made that ring and now I've turned it off. And you'll simply have to come home with me."

The man grabbed Junior's clenched hand and there was a stinking, roaring flash. And Junior knew they were flying somewhere far and hot and deep.

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OUR INHABITED UNIVERSE

PART VII—Systems Within a System

By JAMES BLISH

THE POISON giants of our solar system, the planets Jupiter, Saturn, Uranus and Neptune, all have satellites. Some of these satellites are of respectable size—quite large enough to be called "plan[illegible]ir primary were the sun, instea[illegible]of the giants.

Two of these great planets, Jupiter and Saturn, tote around so many satellites that they could fairly be said to be operating miniature "solar" systems of their own. Jupiter has no less than eleven moons. Saturn has nine (possibly ten) plus a ring system consisting of many thousands of small particles. Uranus has five known satellites, and Neptune at least two.

The distances involved are almost interplanetary in scale, too. Jupiter IX, for instance, swings around Jupiter at a distance of 14,880,000 miles, which is almost half the distance of Mercury from the sun.

And some of these satellites are colossal, for satellites. No less than five of them are bigger than our Moon, which, as we've noted previously, is itself bigger than average. (The "average" moon in our system works out to 971 miles in diameter, slightly smaller than Saturn's Japetus or Uranus' Titania, but bigger than the largest known asteroid.) Three of them are actually bigger than the planet Mercury, and one of these three, Saturn's Titan, is as big as Pluto!

Since these worlds are very cold by our standards, or even by Martian standards, most of them should be able to retain atmospheres, if they are reasonably massive. Most of them are. But even without calculating the escape velocity involved, we already know that Titan has an atmosphere—it's been observed directly.

Life Indications Are Unfavorable

Of course the possession of an atmosphere is not in itself a guarantee of life. As we've seen on Venus, an atmosphere can be a shroud as well as a life-sustainer, even where all other factors are favorable. Those many "other factors" seem largely unfavorable on the satellites of the outer planets, though there are wide variations.

Strange Are the Satellites of the Frigid Outer Planets

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It's difficult to present a coherent account of conditions upon the moons of the gas giants without hopping back and forth confusingly among all 27 of them. Under the circumstances, the time-honored method of working outward, in order of increasing distance from the sun, is still the best way of handling the information; but the reader should be warned that the orbital distances about which we'll be speaking from here on out in this article are distances from the respective primaries of the satellites, not the distances of the satellites from the sun. The distance of Jupiter, where we'll be starting, from the sun, for instance, is 483,300,000 miles; none of the satellary distances which will be quoted below are anywhere near that order of magnitude.

The Jovian system, like all the gas giant satellary systems, is swarming with peculiarities, most of which thus far have proven impossible to explain adequately under any consistent body of theory. First of all, the Jovian satellites fall into clearly defined groups. There are five moons within the first million or so miles from the main body; the innermost is Jupiter V, which is 112,600 miles out, or half as far away from Jupiter as our Moon is from us; the outermost in this group is Callisto, at 1,169,000 miles. All four of the largest, or "Galilean" satellites, are in this group of five.

Then there is a big gap: six million miles of nothing at all before a spaceship traveling away from Jupiter would arrive at the orbits of the next group. This consists of satellites VI, VII, and X. All three maintain mean distances from Jupiter in the low seven millions of miles from Jupiter. The difference between the mean distances of VII and X is only 58,000 miles!

Then there is another six-million-mile gap, and then come the orbits of XI, VIII, and IX, all in the fourteen-million-mile bracket. All the moonlets in this group move in their orbits in a direction opposite to the motion of the other satellites, which revolve in the same direction as the rotation of Jupiter itself; motion of this kind is called "retrograde."

Of these three groups, only the members of the innermost follow orbits which lie in a reasonably flat plane near the plane of Jupiter's equator, and are nearly circular. All the other satellites travel in highly flattened ellipses, tilted at extreme angles to each other and often intersecting (on paper).

All of Jupiter's moons except the Galilean inner satellites, however, are tiny, none exceeding 100 miles in diameter, and so they aren't of much interest as possible abodes for life. But the Galilean satellites are something else again.

The innermost one, Io, is 2,300 miles in diameter, and its nearest large neighbor, Europa, is 2,000 miles in diameter—the one slightly larger, the other just slightly smaller—than our Moon. Ganymede, the next one out, has a diameter of 3,260 miles, and Callisto is 3,120 miles through, which makes them both bigger than Mercury.

Ganymede May Have Atmosphere

Unfortunately, Ganymede is not as dense as mercury, nor quite as massive (though the mass difference cannot be very great.) As a result its velocity of escape is lower. Ganymede's velocity of escape is about 1.8 miles per second; Mercury's is about 2.4 mps. Could Ganymede, then, hold an atmosphere?

Indeed it could. Escape velocity is important in determining whether or not a world can hold an atmosphere, but it is just as important to determine whether or not a molecule of gas on that world would be likely to reach escape velocity. There is no reason to think that the temperature on Ganymede could ever rise high enough to drive off more than a few molecules of hydrogen at a time; at a mean temperature of –210° F. any heavier gas (which means *all* other gases but hydrogen) which was present in the first place, would stick around, and really heavy gases like carbon dioxide and water vapor, will be frozen out into snow or ice.

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These conclusions may be checked easily through the telescope, by observation of two of the remaining three Galilean satellites. The albedo or light-reflecting power of Europa is extraordinarily high; since Europa is not large enough or low enough in density to allow for a deep, cloudy atmosphere (the usual cause of a high albedo), we can only conclude that the high index of reflection is the result of ice and carbon dioxide "snow," frozen out of a thin atmosphere onto the rocks. On the other hand, Callisto, for all its size, has a lower albedo and a density only 0.6 that of water—indicating that Callisto has *no* atmosphere worth noticing, and that it probably consists of a small rock core overlaid by a thick layer of ice. It may also have an atmosphere of record shallowness, created by vapor pressure of the ice against the greediness of the hard vacuum through which the big moon moves.

The remaining member of the four, Io, appears to be almost a double for our Moon, in mass, size, and density. But like the other three it reflects sunlight much better, so its surface must be as icy as that of Callisto. Its brightness suggests also that it has a larger rock core than Callisto has, and hence a slightly larger gaseous envelope.

In the Jovian system, however, only Ganymede appears to have an atmosphere deep enough and thick enough to be comparable to the atmosphere of Mars.

Saturn Has Large Moons

Three of the Saturnian satellites have further information to give us, not only about themselves, but about the Jovian moons as well. We'll concentrate on those three, passing over purely astronomical questions such as how Prof. Pickering lost the tenth satellite or why the rings of Saturn have to consist of small particles. Saturn, as a matter of fact, lost a satellite long before Prof. Pickering lost Themis: the rings almost certainly are made up of the fragments of a tenth (or, if Pickering was right about Themis, eleventh) satellite which came too close to Saturn and was literally torn apart by the giant planet's gravity.

The satellites of Saturn, which still remain whole, are generally much larger than the comparable satellites of Jupiter. They generally have even higher albedos, and they do not fall into orbit-families the way Jupiter's do.

Seven of the Saturnian satellites are bunched within 900,000 miles of their primary. There is one more, Japetus, at 2,210,000 miles; and finally, there is Phoebe, trailing forlornly backwards around Saturn at a mean distance of 8,034,000 miles. Phoebe is particularly interesting to astronomers because of its retrograde motion and its extreme separation from the others—which makes it seem that there must be still more satellites of Saturn too small for us to see at present. From the point of view of this article series, however, only Rhea, Titan and Japetus (Nos. 5, 6, and 8 in order of distance from Saturn) offer points worth analyzing.

Rhea is a relatively big body, 1,150 miles in diameter, and extraordinarily bright for its size, the latter fact being true of all the Saturnian satellites. Even tiny Phoebe, the faintest of Saturn's family, is *fifty times* as bright as the faintest Jovian moon, although it is only a little more than twice as big. Rhea, then, has an ice and CO_2-snow overlay, like Jupiter's Europa.

Titan is the wonder satellite of the whole solar system. It is immense: its diameter is 3,550 miles, far bigger than Mercury, exactly as big as the currently accepted diameter of Pluto. Its mass is slightly larger than that of Ganymede, its density probably about that of our Moon. And—

Titan is known to have an atmosphere.

Furthermore, Dr. Gerard G. Kuiper, of Chicago's Yerkes Observatory, has obtained spectrographs of that atmosphere. The spectrographs show that Titan's atmosphere is mostly methane, probably liberally flavored with ammo-

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nia. It is, in short, very like the atmosphere of Saturn proper, or that of any other gas giant.

Japetus, the 1000-mile satellite at the two-million-mile point, is most notable for one totally unexpected characteristic: it is five times as bright on one side as it is on the other.

Did Japetus suffer some sideswiping collision with another body during the formative years of the solar or Saturnian systems? Postulating that Japetus has a sheared face would explain the variations in brightness; but any explanation of an astronomical fact which involves a collision is highly suspect, because such a collision is so unlikely statistically that it constitutes a "special case" for which all kinds of exceptions have to be allowed. Furthermore, a body the size of Japetus which showed an irregularity great enough to account for the flashing effect, would create detectable orbital irregularities which so far have not been observed.

Methane Envelops Titan

The presence of a methane atmosphere on Titan—a Saturn-like atmosphere—offers us a more acceptable explanation for the lighthouse-like behavior of Japetus, especially when the fact of methane on Titan is coupled with the brightness of *all* the Saturnian satellites. Evidently Saturn's family, and the four Galilean satellites of Jupiter, all got a small helping of the same gases that went into the making of the gas giants themselves. Japetus, far out from Saturn in comparison to all the other Saturnian satellites but one, and far out from its primary in comparison with the big satellites of Jupiter, only brushed the source of those gases—or else became discolored on one side by a titanic explosion of gases from the surface of Saturn itself, an explosion powerful enough to envelop completely all seven of the satellites far inside the orbit of Japetus.

Before proceeding on out to the satellites of Uranus and Neptune, let's integrate what we've found so far. Both Ganymede and Titan have atmospheres—the one probably, the other certainly. These atmospheres are like those of the gas giants, made up mostly of methane, ammonia, and possibly some hydrogen and cyanogen. The conclusion that the atmosphere of **any** satellite of a gas giant, where such an atmosphere is possible at al, will be like that of the gas giants themselves, can hardly be avoided.

Complex Creatures

We have already established that certain kinds of life might be possible on the gas giants themselves—a life which would not be hampered by, but would instead take advantage of the bitter cold, the high pressures, and the lethal air. Is it possible that on the satellites of Jupiter and Saturn, where the high pressures and the inconceivable wind-velocities do not apply, life-forms of this kind might evolve into creatures of considerable complexity?

Whether or not the lowly virus is capable of evolving into anything more complex is a question which hasn't been settled yet. Some biologists are inclined to consider the virus as the primary step in the evolution of life from the inorganic; others say that the virus is, instead, a product of degeneration, a parasite which has carried the typical parasite's loss of structure and function to the ultimate, molecular dead end. Regardless of which of these views you accept, however, they both require you to predicate any more complex form of life on a liquid medium, such as water, in which the colloid systems typical of life-processes can be set up.

On Jupiter, as we've noted previously, there is the chance that liquid ammonia might supply such a fluid base. Both the maintenance of the gas in liquid form (household "ammonia" is a solution of the gas in water) and the chemical reactions which would be needed as energy-sources for life-forms, however, would be dependent in large degree upon the

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enormous pressures existing on the gas giants. We could not expect to find such pressures existing on the surfaces of any of the satellites.

This seems to rule out the possibility that any form of life the gas giants might have developed could survive on Titan or Ganymede, despite the chemical similarity of the atmospheres involved. And the chemical similarities and the low temperatures make Earth-like, water-based, oxygen-burning life out of the question.

A Stormy Satellite

Incidentally, a little slide-rule work suggests that Ganymede may be quite a stormy world—not by any means as wild as Jupiter proper, but quite stormy enough to compel an Earthman's respect. This is why:

The heavy gases of which its atmosphere is composed are, like carbon-dioxide, heat-conservative, and would create the "greenhouse effect" which we've mentioned previously in our discussion of Venus. (The "greenhouse effect" also plays a part in raising the temperature at the bottom of Jupiter's atmosphere.)

The satellite keeps the same face to Jupiter as it moves in its orbit, which means that its "day", like the "day" of our Moon, is the same as its "month," or the length of time it takes it to go once around Jupiter. For Ganymede, this period is 7.15 days. Thus, if there is any perceptible heating of the surface of the planet on the sunward side, there will be a sharp temperature differential between the "day" and the "night" sides. Ganymede must be a planet of sharp and fantastically sculptured ice-spires.

The "heating" involved could never be great; the temperature differential is probably about of the order of 10 to 12 degrees. It might at first seem likely that Titan, which has quite a dense atmosphere and a period of revolution of 15.94 days, might show this effect even more sharply. Actually, however, Titan is far too remote from the sun to get enough heat to show any "greenhouse effect" worth noticing. If the temperature differential turns out to be as high as a single degree, everyone will be most surprised.

The five known satellites of Uranus are all technically retrograde, because of the 95° tilt of the axis of the parent body to its plane of rotation. Actually, however, their motions are direct with respect to their primary. All are within "normal" satellary distances from Uranus, the remotest, Oberon, being 364,000 miles away. Uranus is the smallest of the gas giants and does not seem to command the fate of any extremely remote moon as do Jupiter and Saturn.

The biggest Uranian moon is Titania, which is about 1,000 miles through. Since the temperature on its surface can be no higher than –300°F., however, its interest as a possible abode of life is zero. The most recently discovered (1948) and smallest (150 miles) of Uranus' moons is Miranda, which is within 80,800 miles of the main body—astronomically, that's spitting-distance. The tidal effects which all these close satellites must produce in the atmosphere of Uranus must be remarkably complex.

Neptune's Triton is also quite close to its parent—220,000 miles, a little closer than our moon is to us—and is a whopping 3,000 miles through; but again, its low possible surface temperature, on the order of –330°F., rules it out as a world which might hold life. Its motion is retrograde. Neptune's newly-discovered second satellite has no name yet; it is only about 200 miles through, and is 5,000,000 miles away from Neptune—surely the most desolate little ball of rock in the entire solar system.

It is to the Galilean satellites and Titan that we must look for surface conditions even remotely hospitable to suitably protected human beings. As for life native to these worlds, our attitude toward that possibility will have to be like that of a writer toward the manuscript he has submitted: we can hope for much, but we should expect nothing.

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I

THERE were some new faces among the crew that crowded around him as he came up the runway into the airlock, and the *Vanguard* rang with greeting: "Hi, Pete," or "Glad to see you again, Commander Ellsworth," depending upon how well they knew him. Peter felt a bit of nostalgia—but only briefly. The *Vanguard* had been both a comfortable and interesting berth; but in every man's life there were crossroads, and some of them demanded that he give up one course, however pleasant, in favor of something more promising.

And some of them, like this one, took a man just across a tall fence, and let him brush occasionally against his former existence.

"How're things going?" he asked.

Toby Reed grinned. "Fine. We've still got a fine gang, Peter. We're stopping 'em all cold. We'll stop yours cold, too."

Peter felt a mild flash of professional hostility. He was no longer one of them. He had no right to the "Commander" title any more. He was "Ex-Commander" by proper title, if he owned any title at all. He was on the Other Side.

The Ellsworth self-guided missile was perfect . . . no defects,

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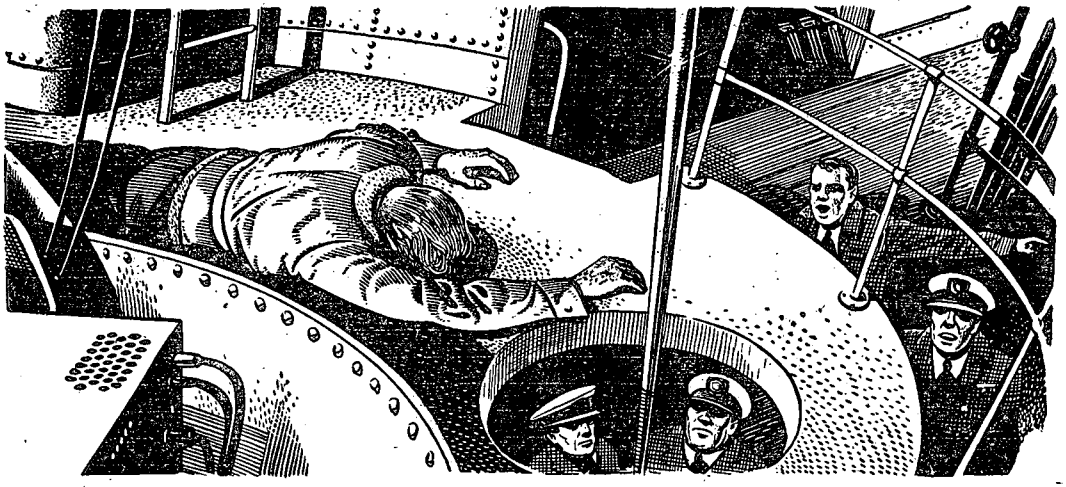
A Novelet by GEORGE O. SMITH

BOMBS AWRY



And the gang that once would have turned the *Vanguard* inside out for Peter Ellsworth were now going to turn it inside out to prove that they were smarter than Peter Ellsworth.

"Think you have anything?" asked Harry Lockwood.

Peter nodded. "Think I'd be handing it over to this gang of thieves if I didn't?"

HE FELT that this was the course to take. He must be as confident as they were. They were a smart outfit, and Peter was only one man; yet Peter knew all the tricks himself, and he doubted that they had invented many new ones. So unless someone had come up with about as new a technique as could be, Peter would win. He had all the old bets covered.

Actually, Peter had been covering them for years. There's a lot of free time in a job like Peter's former command—time to watch and think and plan and set down ideas. For seven years Peter Ellsworth had been in command of the *Vanguard,* and in that time he had seen

no flaws. But the 'ell of it was: it was chasing Ellsworth!

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a good many self-guided missiles launched in the ultimate test against the *Vanguard's* highly-specialized countermeasures crew. He had watched them all fail. He had taken careful note of the reasons. He had worked with the crew against them—

What better training than this for a man who wanted to build one?

Down in the torpedo-hold were three shining metal cigars. Peter Ellsworth's pets. His babies. Sunk into them were all of his hopes, all his meager finances, and all the money that everybody who was Peter's friend had been able to scrape up. He could not fail.

He waved to his former crew and went aloft to the pilot's bridge to see the present commander.

"I'm Peter Ellsworth."

Commander Hogarth eyed him with interest. "You trained me a fine gang," he said warmly.

"They were a willing bunch."

Hogarth smiled. "You're hoping, but it's no go," he said cryptically.

"H'm?"

"Ellsworth, no matter how neutral a man is he can't help being human first. In some situations like this a man could count upon human nature to help him out. Not this time, Peter. Not this time. That gang below would like to have you back. The only way to get you back is to ruin your chances. They'll work hard at it. As for me, I could use an Exec. Forester wants to transfer back to the heavies."

Peter shook his head. "I'm hocked up to the eyebrows," he said. "If I fail this test, I'll be ruined. At an Executive Officer's pay it would take me about two hundred and eighteen years of service to pay it back. That's without eating."

"But you ought to know you can't win."

Peter shook his head again. "This time the *Vanguard* loses and I win a nice fat contract. I know what a self-guided missile has to do."

Commander Hogarth chuckled. "And we'll find out how to wreck both your hopes and your missile, Peter. Then you'll be back busting others instead of building 'em. Why, even Ordnance hasn't come up with a good one."

Peter nodded. "I know. But there's faulty reasoning in the theory that Ordnance is the only outfit that knows anything about ordnance. That's why I went into private venture. More real freedom of thought. I've had it and I've used it, and now I'm here on the other side of the game to prove it."

Hogarth started to reply, but Pilot Henderson snapped the squawk-box key and announced: "Batten down! Takeoff in five minutes!"

Way down below in the bowels of the *Vanguard* the field-generators began to build up. There was no more time for gab. Everybody buttoned down for takeoff, and the *Vanguard* speared the clouds on its needle-nose and went up and up into the black space between the planets.

OUT in the vast empty lot of the Solar System that laid beyond the orbit of Saturn the *Vanguard* lay in wait for its war-game enemy. In one sense it was like a game of solitaire. There were actually two crews aboard the *Vanguard*, kept separate from one another during the trials. The first was a skeleton crew trained to handle the missiles, to check them out, finally to launch them against the 'enemy'. The second crew was the countermeasures crew who would take over the operation of the *Vanguard* against the attack.

Every possible weapon would be used against the missile, every gadget, every device, every brain.

If the *Vanguard's* crew succeeded there would be a space-borne skyburst of flame that expended itself harmlessly. If the crew failed—and they had never been known to fail—then the Countermeasures Department lost three million dollars worth of guided drone. Not the crews. They were safe in the *Vanguard*. Just the drone. The guided spacecraft, the "enemy" spacecraft, which would be

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coupled to every single motion that the *Vanguard* went through from hatch-openings to main-battery fire to space maneuverings. From the drone would come back the sighting-plate information for presentation on the crew's plates, so that visible and audible information created the illusion that they, themselves, were fending off a self-guided missile loaded with a fission-flash warhead.

So perfect was the illusion that, in every such test, the crew swore and sweated it out. It was the best operation that could be devised; even better than using a live crew directly against the deadly things, for someday the crew might fail.

Today, Peter hoped.

The squawk-box honked tinnily and Henderson said: "Drone at fifteen kilos."

Commander Hogarth said: "Torpedo crew make ready and fire!"

There was a slight lurch as Peter Ellsworth's first pet whooshed out of the torpedo tube. He saw it streak away to be gone almost instantly. It was a tiny spot on the radar, curving outward in a veritable crawl towards the spot fifteen thousand miles across space.

"Henderson, take over!" ordered Hogarth.

There was a lurch as Henderson thrust home a master toggle—the lurch of Drone and Mother aligning together. From this moment on, the two were near-identical. Turn for turn, trick for trick, weapon for weapon. Acceleration for acceleration and direction for direction they were one ship. Only in the matter of distance: fifteen thousand miles but closing rapidly, and in the matter of velocity: the *Vanguard* was loafing along while the Drone came up out of Sol's inner system at a terrific velocity, were the two ships un-like.

They were chained together with a single, non-radiating communication band of the Z-wave, multi-modulated in both directions so that attack upon the Drone seemed to be attack against the Mother, and riposte by the Mother turned out to be riposte against the missile from the Drone.

There was an electric-sounding sizzle from below; far across space where the invisible Drone must be, there was a faint flowering of violet as the primary beams lashed out. Someone below was testing the main battery.

Aboard the *Vanguard* were two factions. One of them (The Crew) hoped to see the missile blossom in the emptiness like a futile flower. The other (Peter Ellsworth) hoped that the crew would see their sighting-plates flare be-

Beware of Perfection

PERFECTION is a word with more built-in booby traps than a Korean battlefield. On a cultural level it has been the subject of innumerable knife-edged satires—***Craig's Wife*** comes at once to mind as one of the best. But perfection might be very uncomfortable on other levels besides the moral or philosophical. There are situations where mechanical perfection might conceivably be as embarrassing as ethical perfection.

A clock which kept perfect time and never got out of order is a desirable gadget. But suppose you built a guided missile which ***couldn't*** be shaken loose or lost—and it got after you? That's the pleasant situation which faces Commander Ellsworth in this new novelet, one of the most imaginative to come from the versatile typewriter of George O. Smith.

—The Editor

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fore their eyes in the searing blast that meant their destruction-in-simulation, and their defeat in reality.

It was a perfect set-up. The missile was as good as the best brains could make it. The defense was as fine as could be collected together from the men in the Space forces. Nothing could go wrong.

But it did.

II

IT WAS no failure of man or machine. It was a coincidence so impossibly improbable that only the Divine Intervention of a Deity who was tired of His paper-work could be used as an explanation.

Chuckling in some mysterious Godlike humor, He picked up a meteorite that had been serving as a paperweight on His desk to hold down a sheaf of supplications and prayers. He wound up magnificently, having watched some of His minions playing in the Heavenly Series.

He pitched a clean strike.

The meteorite drilled the Drone right through the middle of Capricorn. The Drone exploded in a puff of flame that flashed in the sighting-plates in the *Vanguard* only briefly before they blacked out.

Commander Hogarth employed a series of robust verbs and adverbs and nouns in a long sentence that ended with its subject: "—ing meteorite!"

Then he asked Henderson: "How long before we can get another Drone out here?"

"About two hours. I'll have to compute. But—"

"Okay. Tell the crew to take a break. Get the galley to run up some coffee-and. Give the whole outfit a Green Alert. We'll pick it up later. Ellsworth, how's about some grub?"

"Okay by me."

"Can you get control of that gizmo of yours and hold it until the next Drone comes up?"

Peter Ellsworth followed Commander Hogarth towards the ladder, saying with a sly grin: "Nope. If I could control it, your countermeasures gang could louse it, remember?"

"That's true. Well—" Hogarth stopped short, staring at Peter's face, which had suddenly fallen into an expression of almost ludicrous dismay.

Peter gasped, "Holy jumping catfish!" and grabbed Hogarth by the arm: "We'd better get the hell away from here—fast!"

"Why?"

Peter started for the squawk-box. Hogarth got in his way. "You're not commander of this crate now, Peter. I'll have to give any orders after you tell me why."

"There won't be time!"

"We'll make time. Now what's cooking?"

"The missile! It has crude memory circuits, that recall the conditions of the selected target for about two hours after the initial exposure . . . they were put there in case a de-tracking maneuver should cause the torpedo to lose its quarry! They'll search for a target that fits the specifications contained in the memory banks and—"

"But—"

"Normally the missile would find the target and smash it. But *now the target's gone* . . . and the missile is still running around loose, looking for a ship of X description! And from what I know of the Countermeasures Operation, each Drone is practically identical with the Mother ship—"

Hogarth's face went white. He leaped past Ellsworth and started up the ladder. "Henderson!" he bawled. "Get mov—"

The din that cut Hogarth off was as clamorous as an air-raid siren running in an empty ballroom. Sound racketed from bulkhead and deck as the amplifiers ran full-throttle. The siren ceased abruptly long enough for the stentorian cry:

"Battle Stations!"

PLATE, girder and structure groaned as the *Vanguard* leaped up at a full

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three-gravities and lurched. The Lanson generators in the emergency hold whined high to cancel the gravity-apparent. Bulkhead hatches slapped shut; tactic-lamps winked on; oil breakers plunged home or came out as the normal load of the ship was switched from cruising-power to battle-demands.

Two spacemen came up through the hatch, which flipped open just long enough to let them through and then slammed closed again. One of them went on up to the pilot's bridge. The other tackled a wire-sealed locker with a heavy pair of cutters and came out with three spacesuits. He hurled two of them at the commander and Peter Ellsworth and started climbing into the third himself.

From the squawk-box came the cries:

"After Station Secure!"

"After Battery Alert!"

"Mid Battery Alert!"

"Communications Alert!"

"Foreturret Alert!"

"Radar and Countermeasures Section Alert!"

"Battlepower Stations Alert!"

"Report," came Henderson's voice. "We are attacked by the Ellsworth Self-Guided Missile. I caught sight of it coming a-beam, just in time to land on the acceleration. It missed by yards. It is now making an off-beam swing, curving below and inward. It's going to come up from behind at about five o'clock. Any orders, Commander Hogarth?"

"Repel it!" roared Hogarth. He looked at Peter. "How do we stop this damned Juggernaut of yours?"

"I don't know," said Peter.

"You'd better find out!"

Peter shook his head. "Everything I could think of was rigged into it."

Hogarth snorted and went up the ladder to the pilot's bridge. Peter followed.

The scene in space was depicted on the radar. Far behind and a bit to one side, the missile was turning to follow them, coming around in a graceful arc. The *Vanguard's* velocity-meter was mounting swiftly; but not fast enough by far. The missile, much lighter than the *Vanguard,* was capable of higher acceleration. Also there was no need of a Lanson generator on the completely mechanical gadget, so that the counter-fields and the necessary mass did not interfere with high gee. So inevitably the missile would catch up with them, and that would be that.

Hogarth looked at Ellsworth. "Radar?" he snapped.

"Radar, infra-red, visible light, and ultra-violet as well as mass."

"Countermeasures! Prepare and launch six radar corner-reflectors, three fission-flash bombs, three oxy-hydrogen flares, two Röntgen radiators and a Lanson generator."

Only seconds later there was a series of whooshing sounds as the items were released. From below came a scattering of flares and blinkings that fell behind as the ship's acceleration lifted it above the speed of the countermeasures devices.

"Turn off the radar and the radio!" ordered Hogarth. "No radiation! Henderson, turn up the Lanson—maybe we can change the pattern of the *Vanguard.*"

The *Vanguard* was hitting it spaceward at seven gravities now and the accelerometer was climbing. As the Lanson generator was turned up, the neutralized-to-normal gravity lightened so that each hundred pounds weighed only about twenty-five. Henderson nursed the rate-of-rise dial so that the acceleration increased more rapidly.

Radar complained: "What's going on?"

"Can't see. Dangerous to radiate."

"Dangerous to not-see," growled Radio.

"What do we do about it?" asked Hogarth.

PETER thought. "We're like a man being hunted by a vicious animal," he said. "In order to run we've got to keep an eye on him—but if we can see him, he can see us! I— Look, Hogarth, we're not using the Z-wave that couples Drone and Mother, are we?"

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"Not any more."

"Well, that's the one band that the missile is blind in," said Peter. "We put in a filter so it wouldn't be able to follow the Z-wave . . . that's the only thing that isn't according to the specs. If you can tune your radar to use Z-waves, you can make that tick at least. Anything else you use to look at it will be an open door and a wide road for it to follow."

"Why didn't you put in a disabling circuit?" complained Hogarth.

"So your gang couldn't find it and use it."

"But at least you could have slipped in a self-destruction circuit to click off after a certain length of time."

Peter shook his head with a sour grin. "Why bother?" he said. "It couldn't miss."

Hogarth roared, "You'd better pray that it does!"

Inaudible, but strong enough to feel through the frame of the ship, the after-station battery went to work. It was a staccato bark, one each second. A veritable hail of high-explosive shells roared back into space.

One of the power-demand meters rose suddenly as the main beam-battery lashed out with raw energy.

A pilot lamp winked on and off and on and off, each wink lighting up the tiny words "Solid Mines" as two cannisters of two-inch steel spheres were strewn in the trail of the *Vanguard*.

From the squawk-box came a cackling laugh as someone pulled the inevitable, banal remark: "When you hear a pistol shot, duck; it's inside the ship!"

Then the radar screen went on again. It was littered with flashing motes; below them was the missile, coming up and up inexorably. As they watched, sweating, a pale blue flash winked on its nose. The flash became a needle-beam that flicked on and off, and at each flick one of the high explosive shells blossomed briefly in space. It did not bother with shells that would be absolute misses; just those that might be dangerous. The beam licked one of the countermeasures gadgets and the flare blew out far and wide.

It came up through the curtain of gadgets without pause. The circuits in its finder had decided some time before that these were diversions and not its intended target. It ignored them all—except the one it blasted out of its path.

The main beam-battery fired again; three barely-visible columns of light streaked away from the *Vanguard* and thinned in the distance. As the columns encountered the missile, the nose of the torpedo disappeared behind a diaphanous-looking hemisphere of pearly-flesh-colored hue. The powerful main-battery beams splashed away from the missile's defences like water hitting a smooth stone.

Hogarth bawled: "Main Battery: off Beams!"

The beams winked out. The pearly radiance ceased and the pale blue flicker came on again, dancing madly as it cleaned out a pathway through the solid-ing mines. A shell, lazier than the rest, flared briefly.

"Henderson: are we on emergency acceleration?"

"We're climbing."

"Climb faster!"

"Can't. We might overload the Lanson."

"Take a chance. We're dead if we don't."

III

THE FLOOR surged up below them; the accelerometer crawled up past twenty gravities and kept on going. The complaining cry of the Lanson could be heard throughout the ship now; its output could not keep up with the increasing acceleration. Peter felt as though it must be at least three gravities behind and lagging more and more.

The missile came on. Its slow, steady advance was maddening. Endowed with a fiendish sentience, it seemed to know that sooner or later it would win and therefore need not extend itself beyond

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its maker's design.

The range kept closing.

"After Station reporting: target visible on the optics!"

Henderson snapped at the spaceman beside him: "Keep it in aim!"

The spaceman took the handles of the optical system and peered into the eyepiece. In the glass above Henderson's board appeared the distant mote that carried their numbers etched on its mechanical guts.

Fascinated, they watched it.

It grew.

It was still coming in from one side, still tending to line up its drive with the drive of the ship, closing steadily. Henderson's knuckles whitened on the steering controls; his feet fumbled for and found the right pedals and put them under a slight pressure.

From behind there came the coughing of the heavy space rifles; three of them side by side, barking in sequence and vomiting one high explosive shell every second. The space-mines light winked again and again. The main-battery lashed at the missile; its beams splashed aside again, even at this range. The battery-crew stopped, for want of power and to let the projectors cool. The winking light on the nose of the missile flickered madly and the space below the *Vanguard* became dotted with shell-bursts and flickers from the solid mines.

A lamp winked on the board and Peter roared: "No! After Station, for God's sake, *no!*"

The repeller-beam punched out, big and thick and tough as it went from the throat of the projector, and thinning as it reached out for the nose of the missile. It touched.

The pearly barrier screen winked on briefly and then it flickered off again. In its place there came a larger flicker of the pale blue.

THE SHIP staggered as it took the shock. The missile's self-defence beam speared upward through the repeller-emplacement and the enclosure exploded outward into space. There was a quick scream of escaping air, cut off a split-second later as several safety-bulkheads slapped shut.

"Report!" roared Hogarth.

"Jones got clipped, but he's not killed. Get Medico, commander."

"Medico coming!" came another voice. Hatch-warning lamps on the panel traced the course of the ship's doctor as he went below to the training station for the repeller emplacement.

"Torpedo Crew! Prepare and launch Missile Number Two!"

"Correct, sir. Take four minutes."

"Four?"

"We've anticipated you, sir."

"Henderson, have we got four?"

"Yes."

"Good, good. Torp Crew?"

"Yes?"

"Good work. Take four—take five if needed but no more."

"Make it three with luck, sir."

"Fire whenever you get the damned thing loaded."

Hogarth looked at Peter with a grim smile. "Why didn't you think of that?"

"I did. It won't work."

"Why not? The defence against a perfect missile is to use another perfect missile!"

"But the one that's running now is hot and ready. The new one will take a few milliseconds to get to running heat. In that time—"

Hogarth growled. "We'll try it."

"Go ahead; but I say it won't work."

Hogarth half-turned away, and then swung back. "Look, Ellsworth, you seem to forget one thing."

"What?"

"This is no longer a game! At this sitting if you prove your ability to make a non-lousable missile you'll get the contract, all right, but it'll go to your heirs and assigns—because in getting the contract you'll lose your life. You can stay alive only by helping to screw up that damned thing out there."

"What are you driving at?" Peter said coldly.

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"I'm just thinking that no man ever made anything so perfect that it couldn't be undone somehow. You're familiar enough with that gewgaw to have developed some contempt for it. Now—what's its weak link?"

"There aren't any, according to my knowledge."

"Damn you, there must be!"

"I've spent a number of years thinking about it," said Peter. "Every factor that could be thought of is covered."

"But *look* at it, man! Your life is riding on the nose of that thing. What's money and position now?"

"Nothing," admitted Peter.

"Get used to the idea," snapped Hogarth angrily. "It's—"

The *Vanguard* lurched a trifle as the new torpedo was launched. Everybody turned to watch in the optical system.

MISSILE Number Two whuffed out of the torpedo tube and started to turn in a short arc that would make it intercept the course of Missile Number One at precisely the same instant that Number One was passing through that point on its course.

What happened then was merely a matter of circuitry. Number One caught the new menace in its search beams and computed its course in its think-machinery. The answer came out bad; this new device was a definite menace, even though it was far to one side and still looping away. It would return.

The tiny, pale blue flicker thickened into a ravening beam as it lashed across space to drill into the newcomer.

The same sphere of pearly radiance flashed into being around Missile Number Two, but it was not fast enough. The primary battery beam of Number One was into the midsection of Number Two before the screen went up. It did get up, however, to cut off the rest of the beam, which splashed aside in a splatter of eye-aching fireworks and raised the color of the barrier radiance. But the initial thrust of the beam drilled home and Missile Number Two lost its drive. It faltered a bit on its course; it wavered. It fell from power and loafed along for a quarter of a minute before it burst in a blinding incandescence.

"And that," said Hogarth, "is what is in store for us—"

The Lanson, straining below, slipped a cog or missed a beat; more likely, one of the overloaded parts flashed over to relieve the strain. For a bare instant, everybody in the ship felt the full, bone-crushing strain of more than thirty gravities. There was no question of its being deadly in magnitude, and only the brief duration saved their lives; the gravity switch did not even throw, and it was set for about six gravities. The Lanson took up where it had left off, and the *Vanguard* went on and on.

That bare instant was not long enough to cover more than a tiny portion of Commander Hogarth's past life, but the high spots he hit made him remember. He looked at Peter Ellsworth icily and said: "You know your Regs, Ellsworth."

Peter nodded.

"Then you know that I have the power to call upon any man, civilian or not, to perform whatever duty I feel is within his power."

"Do go on! Are you going to order me to stop this game?"

"I so order."

"Why not offer me a purse of money?" Peter said harshly.

"I'll have no contempt, Mister Ellsworth!"

"I'm not giving you contempt. I'm just telling you that if you think for one moment that I'm not doing all I can to keep us in a whole skin, you're thinking wrong as hell!"

"You'll—"

Peter held up a hand. "There is one way," he said thoughtfully.

Henderson's hands went whiter on the levers. Out of the corner of his mouth Peter said, "Steady, spaceman."

"Best I can, sir."

"What way?" asked Hogarth.

"We'll have a fifty-fifty chance if we cut the ship in half! The circuits in the

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missile won't register properly on a couple of ship-halves—"

Hogarth grunted angrily. "Thus making it appear as though your missile was unbeatable? Not on your life!"

Peter looked at Hogarth as he might have at a roach in his coffee. "I'm still a young man," he said calmly. "I've been reasonably happy and I dislike immensely the idea of dying. But if that's the way you feel, I'll go along with you quietly—but with a big flare to mark the spot."

Hogarth's face was puffy and red. "I still have the power to impress you as I think you're able. I hereby make you temporary Executive Officer of the *Vanguard*—and since I have been on duty for three hours without relief, I am going off duty, leaving you to command. I have one order: *keep this ship intact!*"

"I suppose it's court martial if that critter of mine roughs it up a bit?"

"Don't be banal. Just—"

"Cutting apart might be a good idea," suggested Henderson. "It—"

"You'll stay out of this!" roared Hogarth.

PETER turned to the intercom and opened the key: "Radar! Radio! Countermeasures! Fire up!"

"What about the radiation-silence?" asked Radar.

"Forget it! The missile has our picture in its mind. We're not agile enough to play squirrel, and there just ain't no place to hide. We might as well radiate all we want and get a better picture of the thing. Fire up!".

The blank screens went on; the one that had been pasted and patched to use the Z-wave band winked out for a few seconds and then came back as the regular—and more accurate—radar came back. The spaceman gave up the optical sighter because it was no longer needed. The ranging-radar and the course-finding radar, coupled together with a ton of electronic equipment, produced a graphic diagram of the courses of missile and target—including the point where they crossed. Time and range were instantly computed, and the ordnance men in their turrets relaxed; the various projectors were now aligning themselves automatically with the intercept-spot.

The missile was a few thousand yards behind and closing up the distance at an alarming rate.

"Can you jerk-slew it?" snapped Peter.

Henderson's white-knuckled hands moved. The drive ceased.

"What in hell goes on!" roared Hogarth, coming out of his chair.

"I'm not relieved of command," replied Peter. "Sit down!"

Henderson hit the steering drivers and turned the free-flying ship sidewise to its course.

"Now!"

Henderson hit the power lever as hard as he could. The *Vanguard* headed out on a vector-angle to its course, leaving the proscribed orbit at the maddeningly slow crawl of feet per second. At the same thirty-odd gravities, it still took time to put some space between the tail of the ship and the course upon which it had been running.

The angle was a backwards drive by some degrees. The effect was almost exactly the same as if the quarry had stopped and then angled sharply on its course. The fact that the *Vanguard's* velocity with respect to Sol (or anything else in the universe) could be measured in thousands of feet per second had nothing to do with it. Relativity. The important thing was the *Vanguard's* course and velocity with respect to the missile.

The missile, aware in its delicately-balanced circuits that the target had swooped aside, was forced to repeat the same maneuver.

After it had seen the maneuver performed.

In spacial terms, the maneuvers of ship and missile could be described as "right-angling" away from their former course; but in relative terms, as seen from the ship, the missile seemed to perform a sharp curve in pursuit of its target . . . but not sharp enough. It missed.

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And the *Vanguard* had another few minutes of respite; a few precious yards of safety.

In no man's mind was the idea that this spelled defeat for the Ellsworth Self-Guided Missile. The first knockdown does not end a prize-fight; in fact, the journey of a thousand miles begins with a single step. The *Vanguard* had been on the defensive from the beginning, and the entire criterion of the exercise was whether the *Vanguard* and its crew could make Earthfall in one, well-integrated piece.

PETER watched Henderson eye the radar screen and begin to get set for the same maneuver again. Then he opened his intercom and called: "Countermeasures? Get with the After Battery and see how fast you can rig up a fast-time electronic switch. Can you patch one between the pressor-battery and the barrier screen?"

"Probably. Why?"

"You've got to push that thing in the face and then cover your own face when it shoots back. You'll have a little longer time if you can make it a one-two-three with the screen, the main battery of beams, and then the pressor. Get it?"

"On the hop, sir."

Peter looked at Commander Hogarth. The commander was sitting tense in his chair, his elbow on the computer's table, his chin cupped in his hands. There was a completely nondescript expression on Hogarth's face. If the obvious willingness of the crew to leap to Peter Ellsworth's slightest suggestion irked him, it did not show.

And of the latter there was plenty of evidence. There was a ring to the voice of Countermeasures—a sound of confidence. The tone of a man who knew and respected the person and the abilities of Peter Ellsworth. There had been a sort of friendly rivalry when Peter had come aboard: Peter had been the renegade who had gone over to the other side. But now he was back; and that he was back—and working against himself—because his hide depended upon it seemed unimportant. The basic fact was that of Peter's return.

IV

PLATES groaned and girders complained as Henderson went into the jerk-slew maneuver again. And the missile missed again, simply because it was a trailing device and had no precognition.

But it was a losing fight. Respite for the moment was gained—but this could not go on forever. Each dodge brought the flaming death of the missile's warhead nearer to them, so far as actual distance was concerned; it merely brought it nearer "slower." The *Vanguard* was the clever rabbit running from the dog. But there was no bramble in which to find safety.

Peter studied the ranges, then glanced at the screen that diagrammed the ship's course during such an operation. He grinned faintly. So far the *Vanguard* had eluded the missile; but if this had been a real space engagement, the *Vanguard*, in its preoccupation with the missile, would have been a sitting duck for the enemy ship that had released it.

The squawk-box said: "The gizmo is connected as you suggested, sir."

Peter said, "Good. Let it rip!" He turned to Henderson. "Let's go, Henny. Straightaway, fast and hard!"

Henderson leaned down on the levers, made the dodge, and went straightaway.

"Can you line up with our other course?"

"Sure . . . but why? Intrinsic velocity doesn't mean a thing. We're fighting one another, not one-another-with-respect-to-Sol. As far as relative positions go, we're just standing still and all I'm doing on these levers is running your missile back and forth in space."

"I know; but I have an idea."

Henderson nodded and fiddled with his levers again until the course was lined up with the previous line of flight.

"Okay, idea ahead," he said. He set

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the rate-of-rise dial as high as he could without winking on the alarm lamp and began to lean back.

"Don't relax yet. This might not work."

"I'm not relaxed. I won't be relaxed until I'm back on Mars, steering my blonde around a crowded dance floor."

From below came the alternate hiss and click of equipment, and on the radar screens there was an off-and-on stuttering. The deadly, eye-searing columns from the main beam-battery lashed out, flickered a moment against the inside of the *Vanguard's* defense-barrier; then the barrier winked off and the beams drilled down at the missile, to splash aside as spectacularly harmless. A moment later the beams themselves winked out; and the missile's pearly-radiant barrier, its stimulus gone, died also. Instantly the pressors slammed their thick columns against the missile's nose. They gave a hard, powerful thrust, then were cut off. The *Vanguard's* barrier leaped up again just in time to stop the missile's counter-attack.

It was *bang! press! cover-up!* . . . again and again and again.

"Are we making any headway?"

"The range-record says we're not losing ground as fast as we were."

Peter took a breath. "We'll hit a balance point," he predicted.

"When?"

"Pressors exert force in inverse proportion to the range. So—the closer that thing of mine comes, the harder it'll get pushed back. Eventually the thrust versus the missile's drive will reach a balance."

Henderson nodded. "And when does that goddammed monster of yours run out of power so we can leave it here and go home to my blonde?"

"It's got about twice as much reserve as the *Vanguard.*"

HENDERSON groaned and looked at the range-record; it was mildly heartening. The missile had closed from ten thousand yards to five thousand yards in a matter of a minute; but the next twenty-five hundred yards had taken a bit more than a minute, and the next section of twelve-hundred fifty almost two minutes.

The process of *bang! press! cover-up!* continued.

Every eye on the *Vanguard* watched and every mind was busy with the same computation. And in a half hour the missile had closed up to a couple of hundred yards and was, to all intents and purposes, stationary with the ship. As far as the missile was concerned, its driving thrust was now equal to the resistance it encountered, and so it no longer moved.

Henderson asked: "May I relax now?"

"Until we can think of something, yes."

Hogarth sat up, cleared his throat, and said, "You've done half a job, Ellsworth. Keep it up."

Peter eyed the commander. "What do you mean?"

"I hate to admit this, but the rules regarding self-guided missiles state no time-limit. From a statistical point of view, you're a fifty-fifty success, so far. If this were a real engagement, the *Vanguard* would now be considered immobilized . . . your one-million dollar missile has immobilized a fifty million dollar spacecraft. So only until we finish this job can anybody come up with a decision. So go right ahead, Ellsworth."

Peter grunted. "Now *you're* thinking about this as a game, Hogarth. This is no time to yap about contracts." He turned to the intercom and asked:

"Supplies! Have you got a spare Lanson?"

"Three of 'em."

"Crew hear this: Maintenance prepare to jury-rig the ship's spares for operation. Engineering, prepare to connect the control circuits to the existing servos." He glanced at Hogarth. "We may get out of this yet!"

"How?"

"We've one chance," said Peter. "And

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it'll take time. You see, the Lanson field tends to neutralize mass. The missile has no Lanson generator because it is not equipped with a crew that starts to fold up under a few gravities."

"That's a great help," snorted Hogarth.

"Damn right it is! If we can set up a terrific Lanson field we can neutralize our mass. . . then we can run up our acceleration to some really high values! We can probably approach velocities in the region where the Einstein increase in mass becomes considerable; but since our mass will be neutralized, we can squeeze right up in there near Constant. And the missile, having no Lanson, won't be able to make it. We can then run away from it."

"You can't neutralize that much mass."

"I know it. But even one Lanson field in the ship will do the job of making fifty gravities feel like three. So pack two of 'em side by side and you can double it, at least—"

"Fifty times the square-root of two times fifty, plus—"

"—all right, we'll go through the figures later. But it adds up."

"Right. That it does."

"And with four of 'em—"

Henderson turned back to his radar for a moment and then shook his head. "You sound like the guy who installed three fifty-percent power-savers on his crate and had to bale out the gas-tank every thirty miles! What're you trying to do? Get half-way to Centauri?"

Ellsworth shrugged. "We're half way to Hell right now."

THEY all turned to watch the screens. This, if anything, was worse than before. There had been a tenseness, then; the excitement had poured adrenalin into the veins and tuned them high. There had been deadly danger, averted only by some very fast and rough action.

But now the deadly danger was back there, dogging their heels by a couple of hundred yards.

It was held rigidly at that distance by the pressors, which were protected by the fast flash of the barrier screen, and given their opportunity to press down by the switching needs of the missile's own circuitry.

The crew could do nothing . . . nothing but watch; for the super-fast electronic switches could outperform the human mechanism by at least a thousand to one. So instead of being tensed for action—human beings toned into momentary supermen by adrenalin—these same human beings sat and worried about the missile because they now had the time to sit and worry.

All it would take to blast them into nothing-much was to have a fuse blow or a tube kick out or a capacitor break down or a resistor overload or a transformer flash over or a circuit breaker crash open . . . so many things could go haywire. To be sure, such a failure could be repaired in a matter of five minutes by this particular crew of technical experts. But five minutes was about four minutes and fifty nine seconds too late.

It took a little longer than it should have taken to rig the auxiliary Lanson generators, because the gang was busy taking quick looks out of the after-ports or into the radar screens to see their nemesis. But eventually they got the extra generators rigged, and then, with specialized men sitting at various relay stations to observe the possible effects of overload, Henderson cut them in and at the same time upped the rate-of-rise dial.

The accelerometer on Henderson's instrument board quietly zipped across the scale, bent the needle against the safety-peg, and then after waiting for a few minutes, gave up. A small cloud of white smoke obscured the scale; that meter would smell like hell when the meter-repair man took it apart. Of course, it was useless anyway. Normal accelerometers depend upon the apparent increase in the gravitational constant. But on a space-craft where a Lanson generator is used to create a

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neutralization of part of the mass so that the acceleration can run high without crushing the crew, the accelerometer was a complex integrating circuit that measured the power going into the Lanson, compared it to the power that went into the drivers, measured the true gravity of what was left, performed some internal computations and came up with an electrical current that registered on the control panel.

With three Lansons running beside the normal one, and the drivers pushing far beyond their usual scope, the power was so far above its top reading of fifty-gravity emergency power that the accelerometer was useless.

Peter rigged up the doppler spectrograph and tried to get an estimate of how fast they were going away from Sol. It was a good try, but it failed; the constant flash-flash-flash of the main battery of the missile, mingled with the ripostal flash-flash-flash of the *Vanguard*, loused up the observations. Not even the heavens forward could be seen through the blaze.

Henderson called Engineering, and soon a sequence-camera was being rigged —one that would be open only when the flashing was off.

"Now," said Peter, "we wait."

V

HOURS passed. Velocity mounted. The missile was still dogging their tracks. It stayed about two hundred yards back, retreating a bit under the lash of the pressors and coming up between thrusts. Its average distance had not changed.

The worry and concern over a possible failure was almost gone. With nothing to do but fret, the crew to a man had spent their time buttering up their hastily-rigged circuits. The first electronic switch had been augmented by another one and semi-connected, so that in case of a failure in the first the second would cut in with no more than one single sequence of failure. Men sat over the Lanson generators, watching. The back covers were off and set aside and the crew worked over them with test equipment. Voltages and currents were read from point to point and the alignment was under constant observation. Parts were replaced by the techniques once started by the telephone companies of an early Terrestrial Era, who learned how to transfer the lines from one cable to another, and from one central office switchboard to another, without causing the man who might be using one of the lines to suspect that his voice had suddenly changed its route. Of all of the various operations, only the doppler spectrograph proved a flat failure. The sequence-camera was set up and tried; but the time-interval between exposure and development was too long to permit the careful focusing of the instrument on Sol. All they got was smudge after smudge.

Then they gave up, because someone down in Observation cried: "We're pulling away!"

Everybody went below.

It was true. The sequence of flashing had changed, too; but the important thing was that—perceptibly—the missile was receding.

Slowly it dropped back and back until it was no more than a mote in the distance.

Warily, the fire-push-barrier system was shut off.

Radar reported the missile as fifty thousand yards behind and losing range.

No one heard Radar except vaguely. What they were more interested in was the sight of space around them.

IT WAS a complete and total blank. Not a star, no trace of Sol, not a smudge of distant galaxy or even the slight luminosity of galactic gases. The sky in any direction was a complete and horrid black nothing.

It was Peter that said it: "No one knows how fast we've been accelerating. But let's face it: we can't expect much measureable increase in mass until we get into the upper brackets of velocity.

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We're probably running to within a few tenths of a percent of the velocity of light."

Hogarth shook his head. "We haven't had time. To accelerate to the velocity of light with ten thousand gravities would take—"

Peter nodded. "And we haven't ten thousand, I'm sure. But don't forget that we may have been running on subjective time, too."

"Huh?" said Hogarth.

"Time ceases to exist for those running at Constant."

"And—?"

"As you approach the speed of light time slows down toward zero."

"Just what do you mean?"

"Just what I said."

Henderson groaned. "My blonde," he complained. "Not only have I stood her up, but she'll be a hag by the time we get back."

Hogarth snarled, "Henderson, shut the hell up! I've got a wife and kids back there that I'd hate to find gone. Forget that damned blonde of yours. She's probably unfaithful anyway."

Henderson chuckled. "That's what bothers me. I know she is—"

Hogarth started to roar, and Henderson shut up finally.

"So what do we do now?" asked Hogarth of Peter.

"We can't just swap ends, because my missile will continue on its normal course," he said thoughtfully. "What we've got to do is to continue accelerating for some time, but adding a sidewise component to our course once we know that we are out of detection range of the missile. Then we can turn around and head back."

"And what's the detection range?"

"I'm not sure. As good as ours or better."

"Radar!" bawled Hogarth. "Radar, fire up that loused-up Z-wave radar hookup of yours and see if you can catch that asterisked missile."

"That's what I'm worried about mostly," said Peter. "I have a Z-wave locator in the missile, too. It runs on gravitics, you know, which have an instantaneous speed of propagation; the range is limited to the power. It would—"

The squawk-box opened up and said: "According to this Z-wave gewgaw, your missile is almost three thousand miles behind. Fading fast. Four kilos now, and you can make that five by the time I end this gab. Yah—five!".

"—normally begin to come weak at about twenty thousand miles," continued Peter. "But if we're hipping it up close to the speed of light, our mass must be something terrific, and that extends the effectiveness of the Z-wave, too."

"But the Lanson—"

"The field from the Lanson generator is local. And even so, it has nothing to do with the Einstein Increase. So far as the outside universe goes we are a massive something-or-other traversing space at a velocity near to that of light. I'm of the opinion that we are near enough to Constant so that the increase in mass has gone high enough to produce the Einstein warping of the space fields. That's why no light is getting in."

No one felt too much like arguing with Peter. Radar eventually reported that the missile had dropped beyond range. Hogarth looked at Peter, who still shook his head. "Let's run like this for another hour," he said. "I'd like to be sure."

IF ANYBODY ever got around to plotting it, the course of the *Vanguard* would be magnificent ogee curve, covering an astronomical distance.

They had come straight out from Sol. Now the *Vanguard* stopped accelerating along the line of flight, turned sidewise, and started to accelerate in a direction at right angles to the original course. Since the *Vanguard* still moved in the original direction at a constant velocity but was now adding the sidewise component, the course would take the shape of a logarithmic curve. Peter Ellsworth and Henry Henderson, the pilot, drove the *Vanguard* for four solid hours in this side-

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wise direction; then, of course, it was necessary to swap ends with the ship to decelerate another four hours.

The end-product of this maneuvering was to place the *Vanguard* on a parallel course to the original, but displaced by some distance astronomically high enough to permit the ship to return without meeting the missile.

The stars returned after a long interval of deceleration. They appeared in that outside field of awesome blackness as faint misshapen smudges of spread-out light that showed a tendency to coalesce. The stars condensed slowly, looking like the effect on the ground glass of a camera during a focusing operation. It was some time before they actually sharpened down to their familiar pinpoint appearance, and even then there was a definite fore-to-aft dissimilarity in color: the *Vanguard* was still going faster than any ship ever had.

But of more interest to the crew, who watched with their hands ready to crash down on the switches that controlled the system that held the missile at bay, was the sky nearby. The missile must not be there. It could not be there. By all of the laws of logic and of science it should not be there. The *Vanguard* could be pronounced safe if the theory held true: If A cannot detect B, then B can not detect A, all other things being equal.

The theory seemed to hold true. No missile. The crew relaxed.

"Which is Sol?" asked Hogarth. "It doesn't show a disc."

"We must have cut us up quite a distance," said Peter. "But we're not lost. That's Sol right there; the bright one that doesn't belong in that constellation. Catch it?"

Hogarth nodded. "Let's get there. For one thing, I want to find out about this subjective-objective time business."

Peter nodded. He swung the dials and centered the viewplate on a binary below. "That's Centauri," he said. "But we can't tell how close we are to it, any more than we can measure the distance back to Sol. We can compute it when we get back, maybe. But let's face it, we probably are not more than a few light-weeks out from Sol, which means that we've spent some real weeks of time en route. Say six. Maybe eight. So what? We'll get those answers when we get back home. But for the moment, Commander Hogarth, may I now resign from my post? I have succeeded in carrying out your orders; I have eluded the Ellsworth Self-Guiding Missile. Your *Vanguard* is in one piece. We can now return and make Terrafall in one chunk." He sighed. "Peter Ellsworth is a flat failure as a design engineer and a total loss as a financial risk. I'd like to take my somewhat mingled feelings somewhere and nurse them."

"Mingled?"

Peter nodded. "Mingled. This has been a rough row to hoe: I've invented the missile that no man could louse-up, and then I've had to go out and louse it up in order to keep my hide whole. I'm almost convinced that it isn't too bad to be a dead hero."

Hogarth said gruffly, "If that's the way you feel, you're relieved of duty. You will get my official recommendation. Okay?"

"Okay as it can be, I guess. I'm going to my quarters. Wake me up when we get to Terra."

THE *Vanguard* came down onto the vast sands of the desert spaceport, where it was met by hordes of military bigwigs and sobbing relatives. The crewmen were enfolded by the latter. Hogarth went into the Countermeasures office to report. Henderson hiked to the telephone to see what he could do about repairing the damaged affections of his stood-up date.

Peter looked at the men who had come to meet him. They piled him into their car and drove back to Operations.

"Well?" one of them asked coldly.

Peter explained.

"But you were so damned certain."

"I know what to do—"

"Forget it, Ellsworth. Forget it. No

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man has ever made anything that someone couldn't un-make. So what do we do about the investments?"

"I'll pay it back."

"With what?"

Peter shook his head. "Tactically, there is a good chance that the thing will be acceptable. You see, even though we got away from it, the missile immobilized the *Vanguard* for about—what was it?—four months?"

"Not good enough. A normal contract for making these things doesn't pay high enough to make it worth while. The initial contract-grant would have paid us back neatly if we'd been able to follow the stipulations. We invested on a short-term proposition, and none of us can afford the long-term contract."

"There's this," suggested Peter. "We can put a Lanson in the missile—"

"No good. The first thing that OpNav is going to do is to install multiple Lanson gear in the ships. You're licked."

Peter nodded.

"That isn't all. You're bankrupt."

Hogarth came into Operations. "Got some news, Ellsworth. OpNav is going to install the multi-Lanson equipment in their crates. They'll assume that you were the inventor and pay you a fee—"

"How much?" one of Peter's backers asked bluntly.

Hogarth smiled. "They're looking up Peter's financial status right now. The fee will be made exactly the amount that Peter Ellsworth borrowed from you gentlemen to create the Ellsworth Missile."

"Excellent!" the backer said.

Peter grunted. "Broke but honest. Why not add me a couple of dollars?"

Hogarth shook his head. "With you broke and no future," he said slyly, "there's only one thing for you to do. You'll have to rejoin the Force."

One of Peter's creditors asked: "You'll turn over that payment, of course?"

Peter nodded. "We'll accept."

THEY LEFT him, then. He stood there by the window, looking out across the bald spaceport. The *Vanguard*, empty and deserted, stood against the sky a few miles away like a monument to his big flop. Gone were his hopes, his ambitions, his chances to make a barrel of cash so he could retire and spend the rest of his life tinkering with doodads and gadgets as he pleased. He was no longer bankrupt; but it stood to reason that he was looking at his next home: the *Vanguard*. He'd have to re-enter the Service, and when he did they'd toss him into his old job again. Peter could see nothing more for the rest of his active life than driving the ship up and down the solar system.

"Damn it!" he breathed bitterly. "I wish that missile had hit us!"

There came the sudden scream of a siren; it broke off to permit the stertorian roar of the landing field's monster speaker to cry: *"Battle Stations!"*

Men raced out across the field; projectors swiveled around to point upwards and vomit beams of energy that seared the air and made the screech of the siren pale by comparison; a launching station across the field slapped a rising web of missiles across the sky—

No one saw it.

But there was a burst of intolerable light across the field that expanded into veritable sunshine. Heat tightened Peter's face as he took a step backward. The blast came next, to shatter the windows. The room filled with the tinkle of falling glass. The shock tore at Peter, spinning him half around before it hurled him to the floor. Plaster sifted down on him. The ground itself shook.

Out where the *Vanguard* should have been was the beginning of a pillar of white billowing smoke.

Peter looked at the pillar rising towards the stratosphere.

He did not look blankly, nor uncomprehendingly. He looked with gratification. All he had to do now was to talk his way out of the fact that there was one hell of a big hole in Terra's finest spaceport and a lot of busted glass to account for.

Peter Ellsworth's mind was busily planning his next gadget as he left Operations to find Hogarth.

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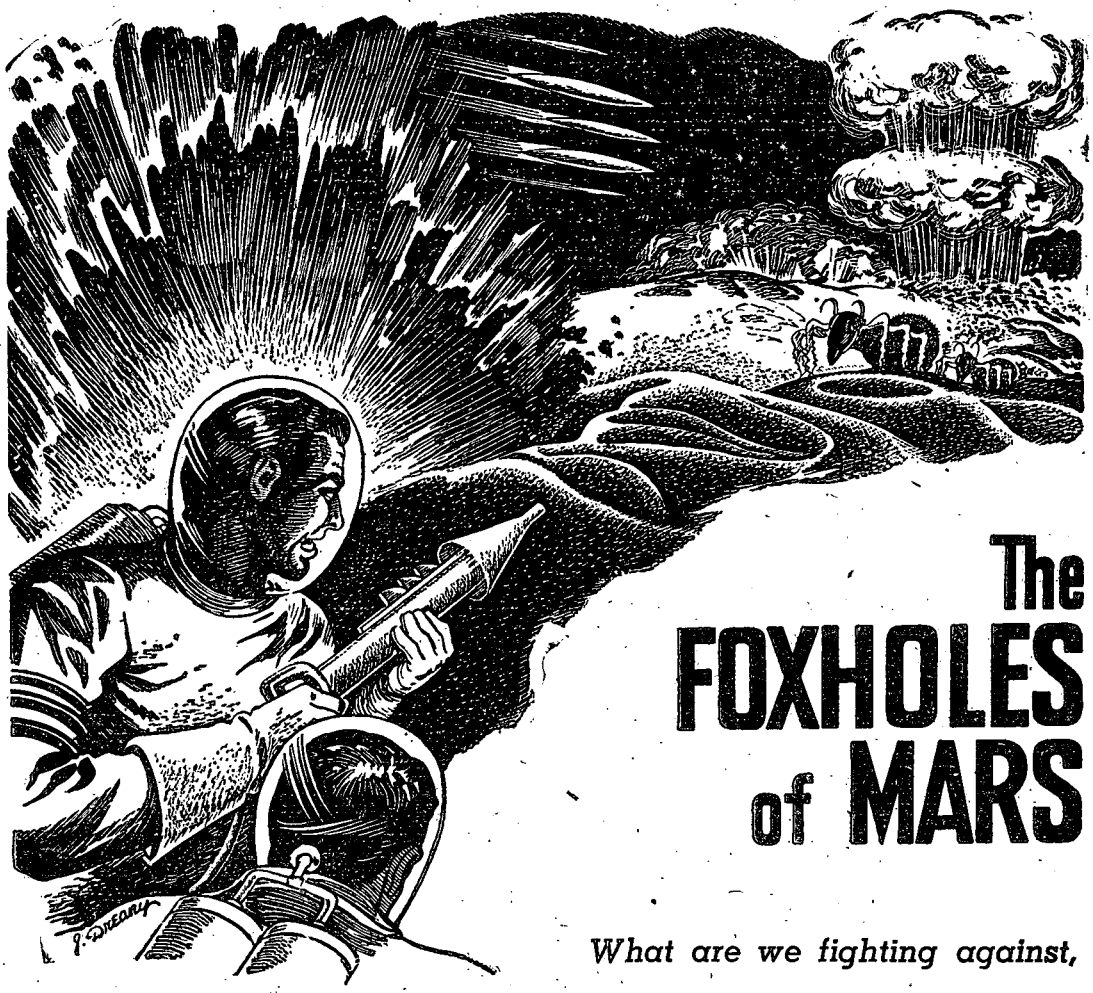

The FOXHOLES of MARS

What are we fighting against, he wondered . . . and what for?

by **FRITZ LEIBER**

The wars of the far future will be fought with giant spaceships, but it will still take the infantryman to hold down the planets. And some of the thoughts bred in the foxholes of Mars or Alpha Centauri Duo or Rigel Tres will be fully as bitter as some of those dredged up in the foxholes of Earth.

EVER inward from the jagged horizon the machines of death crept, edged, scurried, rocketed, and tunneled towards him. It seemed as if all this purple-sunned creation had conspired to isolate, to smash him. To the west—for all planets share a west, if nothing else—the nuclear bombs bloomed, meaningless giant fungi. Invisibly overhead the spaceships roared, distant as gods, yet shaking the yellow sky. Even the soil was treacherous, nauseated by artificial earthquakes—nobody's mother, least of all an Earthman's.

"Why don't you cheer up?" the others had said to him. "It's a mad planet." But he would not cheer up, for he knew what they said was literally true. Soon they would fall back and the enemy would retake the mangled thing they called an objective. Was it the sixth time? The seventh? And did the soldiers

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on the other side have six legs, or eight? The enemy were pretty haphazard as to what troops they used in this sector.

Worse was the noise. Meaningless, mechanical screeches tore at his skull, until thoughts rattled around in it like dry seeds in a dry pod. He started to lift his hands to his ears, then checked the gesture, convulsed with soundless laughter and tearless weeping, bitter memories and searing hatred. Once there had been a galactic society—a galactic empire—and he had played an unnoticed part on one of its nice quiet planets . . . but now? Galactic empire? Galactic horse-dung! Perhaps he had always hated his fellow men as much as he did now. But in the prewar days his hatred had been closely bound and meticulously repressed. It was still bound, tighter than ever—but it was no longer repressed.

The deadly engine he tended, silent for a moment, began again to chatter to those of the enemy; its voice was nearly drowned by their booming ones, like a spiteful child in a crush of complacent adults. . . .

It turned out that they had been covering a withdrawal of Martian sappers, and must now escape as best they might. They began to retreat. The officer running beside him fell. He hesitated. The officer cursed a new, useless joint that had appeared in his leg. All the others—including the black-shelled Martians—were ahead. He glanced around, fearfully, tormentedly, as if he were about to commit a hideous crime. Then he lifted the officer and staggered on, reeling like a top at the end of its spin. He was still grinning in a spasmic way when they reached the security of lesser danger; even when the officer thanked him with curt sincerity, he couldn't stop grinning. Nevertheless, they gave him the Order of Planetary Merit for that.

HE STARED at the watery soup and meat-shreds in his mess-tin. The cellar was cool, and its seats—though built for creatures with four legs and two arms—were comfortable. The purple daylight was pleasantly muted. The noise had gone a little way off, playing cat and mouse. He was alone.

Of course life had never had any meaning, except for the chillingly sardonic one perceptible to the demons in the nuclear bombs and the silver giants in space who pushed the buttons; and he had no stomach to aspire to that. They'd had ten thousand years to fix things, those giants, and still all they could tell you was go dig yourself a hole.

In the old days the possibility of relaxation and petty self-indulgence, against the magnificent sham background of galactic empire, had permitted him to pretend life had a meaning. Yet at a time like this, when such an illusion was needful, it ran out on you, jeered at you along with the lesser lies it had nurtured.

A three-legged creature skipped out of the shadows, halted at a distance, and subtly intimated it would like food. At first he thought it must be some Rigelian tripedal, but then he saw it was an Earth-cat lacking a leg. Its movements were grotesque, but efficient, and not without a certain gracefulness. How it could have got to this planet, he found it hard to imagine.

"But you don't worry about that—or even about other cats, Three-legs," he thought bitterly. "You hunt alone. You mate with your own kind, when you can, but then only because it is most agreeable. You don't set up your own species as a corporate divinity and worship it, and yearn over the light-centuries of its empire, and eat out your heart because of it, and humbly spill your blood at its cosmic altar.

"Nor are you hoodwinked when the dogs bark about the greatness of humanity under a thousand different moons, or when the dumb cattle sigh from surfeit and gratefully chew their cuds under red, green and purple suns. You accept us as something sometimes helpful. You walk into our spaceships as you

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walked up to our fires. You use us. But when we're gone, you won't pine on our graves or starve in the pen. You'll manage, or try to."

The cat mewed. He tossed it a bit of meat, which it caught in its teeth, shifting about cleverly on the two good hind legs. As he watched it daintily nibble (though scrawny with famine), he suddenly saw Kenneth's face, just as he had last seen it on Alpha Centauri Duo. It seemed very real, projected against the maroon darkness towards the other end of the cellar. The full tolerant lips lined at the corners, the veiledly appraising eyes, the space-sallow skin were all exactly as they had been when they roomed together at the Sign of the Burnt-Out Jet. But there was a richness and a zest about the face that he had missed before. He did not try to move toward the illusion, though he wanted to. He only looked. Then there came the sound of boots on the floor above, and the cat bounded away, humping its hind quarters quite like a tripedal, and the vision quickly faded. For a long time he sat staring at the spot where it had been, feeling a strangely poignant unhappiness, as if the only worthwhile being in the world had died. Then he started to eat his food with the vague curiosity of a two-year-old, sometimes pausing with the spoon halfway to his mouth.

IT WAS night, and there was a ground mist through which the wine-colored moons showed like two sick eyes, and anything might have been moving in the shadows. He squinted and peered over the rim of the trench, but it was hard to make out the nature of any object, the landscape was so torn and distorted. Three men came out of the place of underground concealment to the left, joking together in hushed, hollow voices. One whom he knew well (a stocky soldier with big eyes and smirking lips and reddish stubble on his chin) greeted him with a friendly jibe about easy jobs. Then they wormed their way up and over, and started to crawl toward where enemy scouts (six legs or eight?) were supposed to lie. He lost sight of them very quickly. He held his weapon ready, watching for the sight of the enemy.

Why did he hate the soldiers of the enemy so little? No more than a Martian hunting sand-dragons hates sand-dragons. His relationship with them was limited, almost abstract. How could he hate something so different from himself in form? He could only marvel that it too had intelligence. No, the enemy were merely dangerous targets. Once he had seen one of them escape death, and it had made him feel happy; he had wanted to wave in a friendly way, even if it could at best have only wriggled a tentacle in return—

But as for the men who fought side by side with him—he hated them bitterly, loathed their faces, voices, physical mannerisms. The way this one chewed and that one spat. Their unchanging curses, cliches, and jokes. All unendurably magnified, as if his nose were being rubbed in offal. For they were part of the same miserable, lying, self-worshipping galactic swarm as himself.

He wondered if he had hated the men at the office on Altair Una in the same way—

Almost certainly. He recalled the long smoldering irritations over trifles that had seemed tremendous in the hours between the violin-moans of the time clock . . . but then there had been the safety valves and shock absorbers that make life tolerable, and also the illusion of purpose.

But now there was nothing. And everybody knew it.

They had no right to joke about it and continue the pretense.

He was shaking with anger. To kill indiscriminately would at least demonstrate his feelings. To focus death on the backs of men charging with inane hysteria. To toss a nuclear fizz-bomb into a dugout where men sought secret escape in dreams and repeated like

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prayers their rationalizations about galactic empires. Dying at his hand, they might for a moment understand their own vicious hypocrisy.

From out ahead, one of death's little mechanisms spoke concisely, rapidly. It seemed like a bugle call that only he could hear.

Ruby moonlight slid suddenly across the grotesquely tortured ground. He raised his weapon and took aim. Its sound pleased him because it was like a soft groan of agony.

Then he realized he had fired at the abruptly-revealed shadow because it was that of the stocky soldier who had jibed and crawled away . . .

The moonlight blacked out as if a curtain had been drawn. His heart pounded. He ground his teeth and grinned. His feelings were fierce, but not yet determinate. He became aware of the smells of the ground and of the chemicals and metals; strong, sharp, interesting smells.

Then he found himself staring at a whitish patch that never got more than eight inches off the ground. Slowly it approached out of the darkness, like the inquisitive head of a huge ghost worm. It became a face with big eyes and smirking lips, fretted with red stubble. Mechanically he reached out a hand and helped the man down into the trench.

"Were you the one that winged him? That lousy spider would have gotten me sure. I didn't see him until he fell on me."

This then was the end. Hereafter he would give in to the mob, run with the hounds, die purposelessly like a lemming when the time came. Never again would he aspire to the darker, icy insight that gave life a real though horrible meaning. He was a ridiculous little communal animal in a lemming-horde racing across the galaxy, and he would live like one.

He saw the small black object falling swiftly through the mist. The stocky soldier did not. There was a deafening blast, that slapped the skin. Looking up he saw the stocky soldier still standing there. Without a head. As the body stumbled blindly forward, tripped and fell, he began to laugh in little hissing gusts through his teeth. His lips were drawn back, so that his jaw muscles twitched and pained him.

HE FELT contemptuous amusement at the blond soldier. The blond soldier had been to a third-rate nuclear technics school of some sort and believed it had been a serious mistake to put him in the infantry. Nevertheless the blond soldier was ambitious and took an unusual interest in the war.

They stood alone at the crest of a ridge thick with violet and yellow-spotted vines. In the valleys on either side, their units were pushing forward. Trails of dust and tracks of mashed vines extended as far as the eye could see. Various huge engines trompled forward, carrying men, and other men ran fussily about, freeing engines that had met with some stop or hindrance, as if the two were inextricably united in an unimaginable symbiosis. Small machines bearing messengers went swiftly to and fro like centaurs, a superior type of individual. Other machines spied watchfully overhead. It was like some vast, clumsy monster feeling its way; cautiously putting out pseudopods or horns like a snail's; withdrawing them puzzledly when they touched anything hurtful or strange; but always gathering itself for a new effort. It did not flow, but humped and hedged and scuttled. Like an army of Rigelian roaches. Or the driver ants of Earth that were so like miniature Martians, with their black-weaponed soldiers, foragers, scouts, butchers, pack-carriers.

And they were truly neither more nor less than ants. He was no more than an epidermal cell in a monster that was dueling with another monster, very careful of its inner organs but careless about its epidermis. There was something comfortingly abstract and impersonal about the idea of being united in such a way with many other men,

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not because of any shared purpose, but merely because they belonged to the same monster, a monster so large that it could readily do duty for fate and necessity. The fellowship of protoplasm.

The blond soldier murmured two or three words, and for a moment he thought the whole army had spoken to him. Then he understood and made the necessary adjustment in the instrument they were setting up.

But those two or three words had plunged him with breathtaking abruptness into the worst sort of inner misery. What was abstract had become personal, and that was bad. To conceive a monster made of men was one thing; to feel the insensate, inescapable prod of a neighboring cell and realize the stifling, close-packed pressure of the whole, was another. He lifted his hand to his collar. The very air seemed to convey to his skin the shoving and jostling of distant, invisible individuals. The nudge of the galactic horde.

They were at the end of the crest now, atop a little hillock, and he stared ahead to where the unknown objectives lay and where the air was clearer. He felt as if he were suffocating. His new mood had come as utterly without warning as most of his moods now came, gushing up explosively from some wild, alien, ever-expanding dimension within him.

Then, in the broad expanse of fantastically clouded sky ahead of him, he saw his friends' faces again, orderly and side by side, but gigantic, like a pantheon of demigods. Just as he had in the cellar and several times since, only now altogether. The only faces that meant anything in the cosmos. Black George, with the wide grin, that looked, but was not, stupid. Hollow-cheeked Loren, peering up with shy canniness, about to argue. Dark Helen, with her proud, subtle lips. Sallow Kenneth again, with his veiledly appraising eyes. And Albert, and Maurice, and Kate. And others whose features were blurred, heartbreakingly suggesting friends forgot. All transfigured and glowing with warmth and light. As meaningful as symbols, yet holding each within itself the quintescence of individuality.

HE STOOD stock-still, beginning to tremble, feeling great guilt. How had he neglected and deserted them? His friends, the only ones deserving his loyalty, the only island for him in the cosmos-choking sea of humanity, the only ones with worth and meaning; compared to which race and creed and humanity were without significance. It was as self-evident and undeniable as a premise in mathematics. Heretofore he had seen only the masks of reality, the reflections, the countershadows. Now, at a bound, he stood beside the gods in darkness who pulled the wires.

The vision faded, became part of his mind. He turned, and it was as if he saw the blond soldier for the first time. How had he ever believed that he and the other soldier might have anything in common? The gulf between them was far greater than if they had belonged to different species. Why had he ever given two thoughts to such a silly, squinty-eyed, bustling little organism? He never would again. It was all very clear.

"We'll get them this time," the other soldier said with conviction. "We've got the stuff now. We'll show the bugs. Come on!"

It was wonderful, hysterical, insufferable. Yesterday, spiders. Today, bugs. Tomorrow—worms? The other soldier really believed it was important and noble. He could still pretend there was that kind of meaning and purpose to that sort of slaughter.

"Come on. Get the beta cycling," said the other soldier impatiently, nudging him.

It was all very clear. And he would never lose that clarity. By one action he would cut himself off from the galactic pack and cleave forever to the faces in the sky.

"Come on," ordered the other soldier, jerking at him.

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He unsheathed his weapon, touched a button. Silently a dull black spot, not a hole, appeared in the back of the blond soldier's head. He hid the body, walked down the other side of the hill, and attached himself to another unit. By morning they were retreating again, the monster badly hurt and automatically resisting disillusion.

He was an officer now.

"I don't like him," said a soldier. "Of course, they all try to scare you, whether they know it or not. Part of the business. But with him it's different. I know he doesn't talk tough, or threaten or act grim. I know he's pleasant enough when he takes time to notice you. Even sympathetic. But there's something there I can't put my finger on. Something cold-blooded. Like he wasn't even alive—or as if *we* weren't. Even when he acts especially decent or thoughtful toward me, I know he doesn't give a damn. It's his eyes. I can read meaning in the eyes of a Fomalhautian blindworm. But I can't read anything in his."

The soaring city seemed alien, though it had once been home. He liked it the better for that. Civilian clothes felt strange against his skin.

He whisked briskly along the sidewalk, taking the turns aimlessly when it split at the pedestrian cloverleafs. He looked at the passing faces with frank inquisitiveness, as if he were at a zoo. He just wanted to enjoy the feeling of anonymity for a little while. He knew what he was going to do afterwards. There were his friends—and there were the animals. The fortunes of his friends were to be advanced.

Beside the next cloverleaf was a speaker, and a little crowd. There had been a good deal of that sort of stuff since the truce. Curiously he listened, recognized the weakness of the words. They were sloshed with ideas, tainted with unprofitable, poorly-selected hatreds. The call to action was tinged by an undercurrent of bitterness that argued inaction would be better. They were civilized words, and therefore useless to one who wanted to become an animal trainer on a galactic scale. What a zoo he'd have some day—and every single beast in it advertised as intelligent!

Other words and phrases began to ooze up into his mind: "Thinkers! Listen to me . . . cheated of what you deserve . . . misled by misled men . . . the galactic run-around . . . this engineered truce . . . the creatures who used the war to consolidate their power . . . the Cosmic Declaration of Servitude . . . life—to lose . . . liberty—to obey . . . and as for the pursuit of happiness—happiness is a light-millenium ahead of all of us . . . our universal rights . . . Free Martia! Terra for All! Revenge . . ."

These unspoken words, he felt, were the harbingers of leadership. Alexander had done it. Hitler had done it. Smith had done it. Hrivlath had done it. The Neuron had done it. The Great Centaur had done it. All murderers—for only murderers won. He saw the brilliant light-years of his future ahead, endlessly. He saw no details, but it was all of the same imperial color. Never again would he hesitate. Each moment would decide something. Each of his future actions would drop like a grain of sand from an ancient hour glass, inevitable as time.

Profound excitement seized him. The scene around him grew and grew until he seemed at the center of a vast, ominous, spellbound crowd that filled the galaxy. The faces of his friends were close, eager and confident. And from a great distance, as if from beyond the stars, he seemed to see his own face staring back at him, pale, skull-eyed, and insatiably hungry.

Read DRAGON'S ISLAND, a Novel of Man Vs. Mutant by Jack Williamson

Featured in June STARTLING STORIES—25c at All Stands!

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(Continued from page 6)

which follow them, have produced an original idea, good or bad. It is not safe to be original, it is safe only to conform.

The seeds of destruction are therefore self-sown in any totalitarian system, by its suppression of its own talents, by the corruption of its best minds.

But to think that the democracies have an entirely clear record in this respect is ostrich thinking. Dr. James O. Beckerley, classification director of the Atomic Energy Commission, remarked gloomily in a speech at Adelphi College that if the curbs on scientists weren't eased, "our atomic program may disintegrate for lack of new ideas." The ban on the exchange of ideas, he said, may be necessary for reasons of national security. But if it continues, if scientists cannot confer on their problems and industry cannot bring in new processes and methods, the future of the atomic program is not promising. A large industrial firm with the money and facilities to advance atomic research substantially for peacetime use is checked from doing so because it can get no information. Paradoxically, Russia is in a better position because, inside the Iron Curtain at least, information is available to all scientists, whereas here we even keep it from each other.

Compurgatorial Oaths

Dr. Edward G. Conklin, Princeton biologist and president of the American Philosophical Society, believes that all scientists should assert their integrity by resisting loyalty oaths and restrictions upon freely expressed opinions on the campus. Retired Associate Justice Owen J. Roberts of the Supreme Court adds fuel to the conflagration with a protest against "compurgatorial" oaths, which he defines as swearing oneself free of sin in past and present, even if the definition of a sin changes overnight by administrative dictum.

Refrigerated war and violent suspicion have not only disrupted relations between not-so-friendly nations, but have also interfered with the normal exchange of information between genuinely friendly countries. There is deadly danger in such repression, danger that the world may degenerate into a collection of armed feudal islands, eternally glaring at each other.

As a class, scientists tend to be one-worldish and anti-isolationist. They know that people are people, regardless of boundary lines or language, and that hatred of others is generated in them by outside political pressures deliberately employed. They know that a fact has no nationality and that knowledge is good only when it is universally available. They believe information should be freely pooled so that the lives of all people may be made better and that scientific secrets should be held to the absolute minimum considered vital to national security.

This is the compulsion which has led so many scientists to defend their colleagues who have been accused of disloyalty, or "un-American" ideas. They may disagree with the ideas, but cling to Voltaire's prescription for freedom—that a man be allowed to speak his mind.

LETTERS FROM OUR READERS

EYEING with apprehension the ever-threatening-to-topple pile of letters, all of which he would like to jam into this column somehow, ye ed counts rapidly on fingers and toes, sighs and admits the necessity to do some culling. If you think the most provocative letters have therefore been singled out, you may be right; sparks have been known to fly in this letter column before. But don't let that discourage you from writing gentle missives if you are a gentle soul. You're welcome.

PITY THE SCHNOOKS

by Joe Gibson

Mines, Old Tooth: Aren't I the gay rogue, tho? Heh. And if Shelby Vick isn't pinning my ears back around here somewhere—Tommy Lee Tracy, what've you *done* to him?

But I'm in a good mood, Sam, what with this ego-boo and all, and in excellent spirits to pin *your* ears back. We'll start with the middle one—"What's New in Science?" it sez here. And "If you are worried about the flash heat and radiation from A-bombs . . . buy a few rolls of aluminum foil."

Everyone now rise and doff their heads, and we shall observe a moment of silence.

Man, imagine the shock-wave hitting that aluminum-foil kimona! Heh. Like grandpa caught out in his nightshirt in a stiff breeze! Now, let's see—we'll take your ears in pairs now, Sam. That editorial. Yakk! Oh, man—Fandom Arise, Rebuild The Cities! Sound the flute and beat the drum! Oo-o-o-o-o-ooooh, Sammy.

There is, among others, a little whirly-bird which buzzes around Palo Alto, California, which is called

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the Hiller Hornet. It's a product—experimental, so far—of Hillercopters, Inc.

It's more than a heliocopter. Heliocopters got troubles. They're harder to fly than conventional aircraft; due to the torque of their big rotar-blades, they "crab" through the air in a half-sideways, half-nose-down attitude, which is somewhat unstable, which keeps the pilot tense at the controls every second they're airborne. Also, commercial heliocopters cost $20,000.

Stan Hiller is a guy who does not approve of this state of affairs. He's the boy who came up with this coaxial-gear gimmick in the first place, back in WW2, when he was just 15 years old. Now he's got a million-dollar business and he don't like standing still—not even in midair, if it costs $20,000.

So the Hiller Hornet is a jetcopter. It has small jet engines (ram-jet, not turbo-jet) out on the tips of the rotar blades. This has the peculiar result of eliminating the torque of that big fan. And this has made the Hornet possibly the safest aircraft ever built. It flies straight, without "crabbing." It goes up, down, left, right, forward, backward—anywhere a heliocopter will go—and can hover in midair. And the pilot can take his hands off the controls! They claim you can put her into any flight altitude you want and release the controls, and she'll stay there—but even if you can put her in level, forward cruising speed and relax with one finger on the coordinated pitch stick, it's a big something.

Faults? Top speed was said to be just 90 m.p.h.; it carried only two people, and only for a distance of 50 miles.

Price? Hiller said he could retail 'em for $5000. The ram-jets gobbled fuel, but using cheap stove oil it averaged out to about the same cost as aviation gas.

And one other thing: any failure in the controls or if you run out of gas in midair, and those rotar-blades lock into "slow descent" pitch—letting you down like a parachute.

Not too good, but promising—moreso than, say, the 1901 automobile. And something's happening here that never happened to the automobile. Y'see, Hiller isn't producing this whirly-bird. Not this jalopy model, anyway. He's tied up in war contracts. Just happens that the Armed Forces want a better, improved model—and now, not ten years from now—

Then, there are a few other gimmicks. Radar altimeters, which tell how high you are from the ground—and show the ground rising up under you so's you can turn around before smacking into a mountain in the dark! And omni-range navigation. They're working on something which is like a detailed map under a glass plate. A little blue light "spots" the position of a radio station on the map, while a little red light moves across the map, "spotting" the plane's exact position every minute of the flight. You don't even need to read a compass heading! And then, landing in thick soup with drizzling rain, they got GCA which has a radar ground operator talk the pilot down, and they got ILS which has a radio beam the pilot rides down, and they're working on a few other things—including gadgets to replace the pilot.

And there are flight patterns. I wonder how many highly intelligent fans know aircraft have airways traffic regulations, flying cross-country, these days? And there are approach patterns and let-down procedures and one thing and another—it just isn't at all like the funny-papers. And aerial traffic cops? Have a look at the Air Rescue Service. Today, a pilot files a flight plan—and if he don't arrive where he said he was going within an hour after he said he'd get there, planes are out searching the whole, dashed countryside for him! Or is it a half-hour? I disremember.

Now then, Sam, let's rebuild the cities. I suggest we bring out a jetcopter so simple to fly that the CAA revises its reg's so even five-year-olds can qualify for pilots' licenses. Now we're cookin' with all burners! Wait—DON'T mention it's safer to fly! After all, you give people the safest vehicle ever made, and they'll darned sure figure out some way to get themselves killed in it. Forget about that. We know it's safer, and that's enough.

Tell ya who we sell jetcopters to—the suburban city-suckers. That bunch of poor schnooks moved out of the big cities and bought themselves a little place in the suburbs, hoping they wouldn't have to pay such high property taxes. So wha' hoppen? Everybody and his cousin gets the same idea. The little suburb becomes a big suburb, they need more schools and libraries and paved streets and lights and overpasses and underpasses and they-went-that-away intersections. And for all this, the boys down at City Hall need more money! And since the suburbs STILL don't have as many people congested into one area as the big city does, the boys down at City Hall haven't got as many schnooks to put the bite on! So our poor guy finds himself paying more taxes, finally, than he did in the city!

So sell him a jetcopter, let 'im get a place in the country and buy his eggs and butter from his farmer-neighbors. They don't need to build no school or library out there, either—he can get his kiddies to the same old school from there, easy, by air. And he makes his own overpasses and underpasses and which-ways, thank you.

So now the country is a good deal and more people can move out of the congested cities. Not to suburbs. To the country.

Now look what happens. Highway tax bills aren't passed; politicians selling apples on street-corners. Toll-bridges go broke. City traffic dies—parking meters no longer pay off. And city airports are crammed to overflowing. Busses and subways are loaded beyond capacity. There just aren't enough taxicabs any more. More busses, more subways, cars designed expecially for taxi service—most auto manufacturers have switched to jetcopters. Moving sidewalks start coming into vogue. Tenements are torn down, apartment buildings renovated for offices. Cities become commercial and entertainment centers. Vast airfields, cleared around their outskirts. For parking only—runways aren't necessary!

Suburbs and smaller cities dying, growing up in weeds. Private homes scattering farther and wider into the country. Telephone and public utilities companies hard-pressed to adapt to the new conditions. Transmission towers finally distribute the whole thing, maybe, including television. Is broadcast power impossible? And small shopping and entertainment centers cropping up in rural regions—that's where the small cities' businesses moved to—

America lived in the country with the hoss-and-buggy, and most folks were the have-nots. So we got the automobile and came to town, and more of

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us were the haves. But there's too many of us to live there. Working there's fine—for business and commerce, you need heavy-duty communications systems and freight connections—but for living we need more space, like in the country. So we gotta have air travel, to travel back and forth without crowding too much.

So it's coming. And as the automobile changed our way of life, so shall this.

And how many intelligent, foresighted science-fiction fans give a hoot about flying?—*24 Kensington Ave., Jersey City 4, N. J.*

About this aluminum foil business, aren't you overlooking the obvious? The flash and radiated heat travel at the rate of light, about 186,000 miles a second. The shock wave travels at the rate of sound, or 1,100 feet a second. Therefore the flash and heat, from which you'd require most protection, are gone and done with before the shock wave arrives and by that time the aluminum has done its work and is definitely expendable. Let it blow like Grandpa's nightshirt—so what?

But your picture of the wistful commuters I like. Nothing driving them but their self-assumed responsibilities, rushing, rushing like dutiful robots, and all the time keeping the old chin up and striving manfully to make like masters of their fate, . . Some day enough of them are going to say "t'hell with it," and civilization will crumble at the kneecaps.

VICK'S VAPORUB

by Shelby Vick

. . . with "Sam's Song" playing softly in the background—

I greet you.

Hi, Sam.

The latest issue of TWS was wonderful, good, interesting, awful.

Bergey's cover was awful. Keep Schomberg. He's a better Bergey.

SOLUTION VITAL was interesting—seemed to have something good there, but the ending was handled rather crudely; just a slight re-vamping of the ancient "You-see,-I'm-blind," ending.

ABERCROMBIE STATION was good, ditto THE REGAL RIGELIAN. But I'm having trouble with Crossen; I can't decide—is it masterful or sloppy? Does he handle all those coincidences with a fascinating blythe unconcern, or is it just a lazy mind at work?

So long as he keeps me wondering, I'll like him.

But FINLAY! Ah, Finlay . . . There is no doubt in my mind about that particular gent. His illo for ABERCROMBIE STATION was a masterpiece at his masterful best! There, we had the Finlay of old, with improvements, yet! This was wonderful.

And then, we had TRS. . .

—and Joe Gibson.

Dear Joe—

Beautiful fem-fen, you still contend? How can you hold out so long? There are beautiful girls, of course. Yeah. This, I know thru experience. But NOT in fandom. Unless they're in the paying fields of sf, there are too many other things to attract the beauties. Fandom is too introverted a thing for a pretty girl. Could it be, Joe, that the reason you think there are so many beauties frolicking around is that you haven't yet met anyone really worthy of that pronoun? Someone might think a muddy river on Earth is pretty until they see the silver river of the night sky, the Milky Way. . .

Got any loose bux crinkling around in your jeans? Aren't worth much, are they? After all, what can money buy? A choice steak; a new car; a TV set—*or* it can do something really worthwhile for you, like get your name on the scroll to be presented to Walter A. Willis at the Chicago con, when he's brought over by your doughnation.

Remember: Walt's the bhoy for Illinois.—*Box 493, Lynn Haven, Florida.*

Gibson, you take it from there.

HECKLING HOSKINS

by Bill Tuning
The 7 Sided Solomon of Santa Barbara

Dear Sam: This is primarily in reference to the letter by Bob Hoskins in the April, 1951 issue and the ensuing editorial comment, and the event has annoyed me to such an end that I'll not mince words over it. Mr. Hoskins says that he has a vague proof that Henry Kuttner is Jack Vance, further stating the source of his information as being THE BEST SCIENCE FICTION STORIES OF 1950, but not remembering the exact page. Then that nitwit, Lemmuel Mutton (then editor of TWS, tho no longer serving in that capacity I'm happy to know) blithely comments that no, Jack Vance is not Henry Kuttner, and definitely states that the two names in question are separate persons. Curious, I looked under the biographical sketch of Henry Kuttner in THE BEST OF 1950 and it states there, with succinct clarity, on page 345, that ". . . . occasionally under the pen names of Lewis Padgett, Lawrence O'Donnell, and Jack Vance."

Yet, in asinine ignorance, or perhaps in a sadistic desire to see conflict in the letter column and fandom in general, that stupid oaf, Mutton, says smugly that Kuttner and Vance are two different persons. Then, as if to further arouse the readers, he cleverly defies anyone who can to guess the identity of C. H. Liddell. How droll! Blazes man! Anyone who has a decent memory and can read knows that C. H. Liddell is Henry Kuttner, *and* Lewis Padgett, *and* Lawrence O'Donnell.

It is really quite suprising to find that the average fan has so little awareness of who is who in the way of pen names, in stf, yet they prattle on endlessly deep in the intricacies and differences between two authors' styles, and sometimes these authors in question are actually the same person. Some authors claim to use pen names to keep separate styles from getting mixed up. Again, how droll! Anyone who cannot keep his different writing styles separated in his own mind, must have no mental ability to absorb and catalog facts whatsoever!

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No doubt the most prevalent reason for an author to use a pen name is, 1) the story in question is of such a revolutionary or controversial nature that his reputation would be hurt if that story appeared under the name which said author uses most often, 2) the story is a new type for him, and his reading public would not like such a story, as compared with his previous works, and 3) the author, desirous of some egoboo, writes some stories under a pen name, keeping it a notoriously guarded secret, until the revelation of the fact that the two are one and the same and reaps bushels of egoboo from the fact that among fan circles and in fan mags everywhere it is excitedly whispered that, "Hey Max, did you know that McGoozle is really Raymond Owplip?" Et cetera, ad nauseum.

Also, Sam, your letter column seems to be a bit dead. Anent my letter in the December issue, Shelby Vick, said, "Oh eGAD, man. What are you trying to do, get lots of letters?" I haven't gotten one letter on the subject, and it was, you must admit, the tender spot of several fen. Also, I fail to find any mention of the contents of this letter in any of the following letter columns.—*Santa Barbara, Cal.*

No street address, as usual. But if you think that habit is going to save you, you seedy Solomon, you have fatally under-rated the opposition. We got your address from Sprague de Camp and so now your entire insidious plot to make me keep all those stories and poems has collapsed like a house of cards.

As to your inside dope that Henry Kuttner is Jack Vance and vice versa—there is more heat than logic in you, Horatio. No matter what you've read or been told, they are not the same. There is a Henry Kuttner—I've seen him—and there is also a real, live Jack Vance, not the same guy. To the best of my knowledge, Jack Vance has never used a pen name. Moreover, right now as this is being batted out on my second-hand Royal, Jack Vance is basking in sunny Italy, while Hank Kuttner is basking in foggy California, not too far from the sage of Santa Barbara.

CAME THE DAWN

by Harlan Ellison

All right Mines: You maligner...you subversive prevaricator. YOU BUM!!!

I am exerting my Constitutional right to squawk.

Happy I was to buy the February ish of TWS; even happier to find one of my favorites Jack Vance therein; even was I sublime in my ignorance till I got to THE FRYING PAN.

It was about one-eighth of the way through that something began to rumble about. When I hit the phrase, "...a visitation a few days ago," I knew something was up.

Knowing how your rag...er...mag is made up in the Summer for the February time, I realized the visitation on the fire had taken place sometime in the Summer—at about the time *I* was in New York from here in Cleveland.

A kernel of thought pounded at my cerebrum, "Could it be? But no...it was too foolish to hope."

And then...

Yes then, you sneak, I read, "...doors opened ye-e-e-ry slowly."

And in the rapture of reading I cried out, "I did *not* open them slowly!"

This brought gurgles of discomfort from my Geometry teacher who thought the reason I was studying my book so hard was that I was entranced with hoary ole Pythagoras and his Theorem.

Making weak excuses, I returned to the FRYING PAN, the suspicion growing more and more material.

I hit it.

He was seventeen...he was an out-of-towner... he was fairly good-looking (modest though I be, you said it kid, not me) . . . well-dressed (it was my one and only good blue suit and I had my copy of SS covering the hole in the jacket).

As I read on I kept repeating to myself, "Wait till the members of THE CLEVELAND SCIENCE FICTION SOCIETY see this. Boy, I'm in. I've arrived."

Then I hit it again. Or it hit me.

CAN I HAVE IT . . . GIVE ME . . . NO . . . GIVE . . . I WAN . . .

You double-crossing....

Let me tell, in retaliation, how it all happened.

It was part of my Summer vacation from slaving over a red-hot pencil. I was in N'Yawk with my Ma. I thought it would be nice if I went to see the eds of all my favorite magazines.

So I went to see JWC jr. (who, by the way is not eight . . . or nine feet tall. When an awed fan like myself sees him, and hears him, he appears to be twenty-three and ½ feet tall. And I'd like to hang onto that notion if ya pleez. And I'd advise anyone who'd like to meet a really "intelligent" fellow to run to N'Yawk an' meet John W. also. It's quite an experience. Boy, did we have a talk on Dia... But that's another story.)

And then I lightly tripped the gay fantastic to the offices of Standard Publishers or some-such-concern.

T'was there that I pushed the doors open in a VERY BUSINESSLIKE and calm, cool manner and was stunned by the ethereal beauty of the gee-orgeous doll behind the glass-panelled booth.

(If you read this, Honey, ask Sam to let you copy down the letterhead. RSVP!!!)

She sat there, her (I betcha) goddess-like legs out of view (dammit) and smiled at me in a manner that induced the awe-struck giddy feeling. Not, you ham, the idea of seeing you in what you so laughingly call, "The flesh."

Falling back upon the old time-honored wolf-call of all seventeen year olds (not versed in your tactics of chasing the poor black-an'-blue seck) I said something to the effect that she was radiantly becoming in that gossamer veil of Macy's spun magic.

I *was not* coarse enough to whistle at one so bee-ootifull.

...and it pleaseth me no end to hear that she thought I was fairly good-looking. At least she didn't scream, turn and run.

Then I met you.

What a let-down!

Here I see this sharp office, a sharper sec... and then you.

Oh no!!

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But I was as polite as possible. Not let-down that you weren't eight feet tall—just let-down that you weren't HUMAN.

We talked (you talked) for a while and then I politely asked if you had any original illos around. I didn't want to have wasted all that time for nothing. I figgered I'd better see something worth looking at besides the Cutie.

So you took me in and showed me a breath-taking masterpiece by Schomburg that, as I write this, is forthcoming.

Figuring, "What have I got to lose," I asked if there was any chance that I might either purchase or obtain the pic.

The answer was no.

I asked if I might purchase or obtain an illo.

The answer was no.

I asked if I might purchase or obtain an advance copy of the next ish of SS or TWS.

The answer was no.

BUT I GOT ONE ANYHOW. SO THERE: NYAAAAH!!

And if I'm not making so bold, may I ask just *how* I got the brush, M-i-s-t-e-r MINE(dles)s? I had a hard enough time trying to get out to have a few (thousand) words with your sec.

None-the-less, I feel that you should have at least tried to find out about whom you were spik-kink about if you were spikkink about. And don't try to wiggle out of it by saying that why do I think I'm the one mentioned . . . that you get hundreds in every day . . . etc . . . . etc . . . . CAUSE IT WAS ME AND I KNOW IT.

But seriously, Sam and Jerry (or if you are the same person, JerrSammy), I'm only kidding. It really was a thrill to break into print (outside of one letter in OW) and in a column too!

Already the fellas can't live with (or without) me.

Frankly, the only way that I will consider this affront squared, is if you send me an original illo (except something by ORBAN. Whyinahell don't you fire that scribbler?).

Something by Finlay or Poulton will do nicely (what's the matter with this kid? is he nuts?).

But to the ish's recently.

My expectations were really in a fizzle when you told me in your office about VULCAN'S DOLLS. I waited patiently in hopes of a new classic and while the story was without a doubt completely absorbing and had different twists to a dust-covered old theme, it left me, at the finish, with a feeling of, "Hmmm...maybe I missed something."

So I went back and read it again.

"HMMM . . . maybe I missed something."

I didn't attempt to read it a third time.

It is pretty sad though, when a really great authoress like Margaret St. Clair has to use the crutch of alien-like words in every other line to put across a feeling.

Dak-dak, phlomis, ilangilang, Bettla-nut, sampaguita flowers, etc., etc.

Trash.

There will be many, no doubt, who will disagree with me. That is their prerogative. It's my opinion and I like it.

As for BARKUT . . . I started reading it when it was started in the little-known FANTASY BOOK magazine. When they neglected to finish it, I was disheartened. I thought I'd never see the ending of what I thought was a good start to an even better story.

Brother, was I mistaken.

Leinster fell right on his proverbial kan-kan when he rit that hunkatripe.

It started out pretty fair, but you can tell where he had to hit the deadline. The words tumble over themselves in an effort, feverish at that, to spell out HACK-HACK-HACK.

Please dear Master, let Hank Kutt's new one be something terrific to make up for these other two let-downs.

But, and I say this without fear of retaliation, you publish two of the best STF mags in the business.

As you said to me, "Amazing is for the babies; Astounding is for the technicians; SS and TWS are for the in-betweeners.

Pal, meet another in-betweener.

So I wanta sign off. You'll be hearing from mine-trooly again (at this point we listen to Mines' scream reverberating down the hall as he plunges to his doom from the window in an abortive effort to escape my wrath. What?) before long.

Oh yeah, CHAD . . . you was wonderful.

And in conclusion....DUCK BUTTER FOR-EVER!!—Yours very Bulbofaggingly (the above word is patented by myself)—*12701 Shaker Blvd., Cleveland, Ohio.*

P.S. Please print the hull letter. My friends will stab me if it don't appear.

So we printed it all—every miserable word—just to show you there's nothing up our sleeve. And your version is no different from ours, except that yours stutters more. So what are you screaming about? It made you a celebrity in Cleveland, didn't it? Egad, if the rest of Cleveland boycotts us I won't be surprised. Incidentally, you can thank Jerry Bixby for making you famous. He wrote the original mistake, I'm too modest.

ANOTHER ILLUSION SHATTERED

by A. E. Hitch

Dead Ed.: Aw, fudge! If Orvil Stien hadn't forgotten to put his address on his letter, I could have solved a great problem for him. Yes, I am willing to push every one of the buttons on the monstrous big control board, and I don't care where the flying saucer lands. Always did want to see how Arcturus looks from Sirius.

I note that Stien defends the old Venus; as a Green Hell Theory. So did I, till I cracked my copy of Willy Ley's "Conquest of Space". He states that, while the spectroscope reveals the presence of large quantities of carbon dioxide in the atmosphere, (about a hundred times as much as earth has) the spectroscope fails to reveal any oxygen, which plants would produce. Alas for the hot, steaming jungles filled with BEMS! Dr. Frank Ross, the Mount Wilson savant who made this discovery, feels that the surface of Venus consists of dry reddish soil heated to about the boiling point of water, swept by hot winds caused by the difference in temperature between the day and night sides of the planet. The "fog" we see in the telescope is probably a perpetual sandstorm covering

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the entire planet, and only occasionally torn by winds to give us a glimpse of the turmoil beneath the veil. Of course this is only a theory, but one which is not contradicted by any of the known facts.

Haven't read all of Blish's articles on "Our Inhabited Universe" but agree with him in principle. When most people, even experts, think of life on other worlds, they always think in terms of dominant life on this planet—oxygen breathing critters that need warm temps and vitamins and protein food and television. But life is pretty versatile, even on earth, on the lower or microscopic levels. Are we agreed that higher life has evolved from one-celled organisms? Good—we'll go on from there. Consider the bacteria, a primitive plant form. The anaerobic bacteria grow best in *absence* of oxygen. The psychrophiles or cold-loving bacteria thrive at temps of 0 to 15° C. And the thermophiles or heat lovers lead a gay life at 85° C., or about 180° F. In their spore-forms these fellers can survive almost anything. It's my opinion that life is not just a special creation for earth—probably carbon compounds which make up protoplasm develop throughout the universe and adapt to the environment in which they find themselves. And the last word has not been said yet on the possibility of silicon life. Crystals show four of the five characteristics of life—they grow, utilize supplies of "food," reject waste and produce little crystals. Perhaps we cannot recognize some of the forms as being alive—f'rinstance microbiologists can't decide if viruses are living. And anyway, the last time I was out Jupiter way a methane breather assured me nothing could exist on such a hot planet as Sol's third, with its poisonous atmosphere. (He didn't convince me, tho).

The cover of your December issue was inspiring, —spotted my kid brother on the far right.

My opinions on TWS stories, as if anyone cared:—

WANDERER'S RETURN—a good yarn. We always liked Homer.

ESCAPE FROM HYPERSPACE—XXX (Mrs. Archer's system).

SONG OF VORHU—excellent, and let's hear more from Miller.

IRON DEER—YYY.

STAR BRIDE—well, I think we Zlimnats have the loveliest color schemes, with our purple skin and silver eyes, but I'm broadminded—as long as members of a species have lloxi and bilateral rghe, they're people.

KEYHOLE—fair.

WAY OF THE MOTH—good! Too bad he destroyed the secret hormone before I got my mother-in-law married off. She's not a bad looker if you don't mind mustaches.

Oh yes, a friend of mine assures me that Asimov, Lewis Padgett and Heinrich Whats-his-name (the one who wrote Agharti) are all the same person. Can this be true? Go ahead, tell me. My childhood faith was destroyed long ago by discoveries on the subjects of Santa Claus, Easter Bunny and the Stork, and another shattered illusion won't matter too much.—*8888 Janis Street, Utica, Mich.*

Asimov? Padgett? Heinrich What's-his-name? Never heard of them. Your friend Orvil Stien, better known as Bill Tuning, has fixed this little caper for all time with his inside dope that Jack Vance is Henry Kuttner. And I thought this was going to beat editing Westerns! Give my sympathy to your kid brother.

THE ROUGHER SEX

by Alice Bullock

Dear Editor: Emory H. Mann's comment re Bergey's cover gals and their state of (un-)dress is first in order. The lack of grotesque gear on the gals is easily answered by statistics from insurance companies. Men have brawn but the girls are not only better equipped to survive (See Darwin) but prove it by a longer life span. Salter, in his comparatively recent book on Conditioned Reflexes comments at length on what happens when an organism is constantly exposed to certain conditions. Artists have been throwing what grandpa termed "nekkid" women to the elements ever since before Titian brought Aphrodite in on a seashell. If Titian wasn't guilty, someone was. I remember such a painting. Bergey has been, then, thoroughly conditioned and readers might as well get that way in a hurry.

Still on Bergey and the predominant red hair angle brought out by Davis. Tsh! Mr. D! Don't you read the ads? Red hair is easy in this age of vegetable catalist D. There is, however, a minor remnant of prenatally conditioned redheads, usually catalogued Shanty Irish.

But let's—like time doesn't—turn backward in our polemic flight to the stories in TWS. The novel and novelets—nothing wrong with them but they didn't register with me. Not bad, just not good. The short stories, disdaining Mr. J. Wells—wowie! Three of them excellent. Darn Sam Merwin though! He left so many holes in his IRON DEER it looks like an air force target sock. As editor he never would have let 'em get by.

Anthony Boucher's STAR BRIDE, Coblentz' THE WAY OF THE MOTH and Leinster's KEYHOLE are so very good maybe that's the reason the DEER didn't run so well. I wonder if Boucher is a descendant of the Anthony Boucher who invented milled edges for coins? Try shorting him on his already short word count. If he screams in agony he is (1) a true descendant or (2) tax conscious, vis normal. If that doesn't work, ask him, huh?—*812 Gildersleeve, Santa Fe, N. M.*

If you have a file of back issues of TWS you might compare the Bergey babes of a year ago with the current lovelies. You'll find considerable growth in sophistication and hair color. As for woman's ability to resist the inclement elements—mink coats in the summer and low-necked dresses in the winter are commonplaces in the U.S. and A., which is probably good training to brave the absolute zero of sunless planets in shorts and bra.

WAIF'S WAY

by Morton D. Paley

Dear Editor: Just wanted to tell you I think

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ABERCROMBIE STATION was terrific—sensational—magnificent—I can't even describe how good it was! This tops all I have read of Vance's (which is just about everything save THE DYING EARTH. I haven't been able to get a copy). I liked THE WORLDTHINKER, SON OF THE TREE, and most of the other stories I've read by that eminently readable author. (I won't mention Magnus Ridolph. After all, a fellow does have to make a living.)

ABERCROMBIE STATION is, to my mind, top science fiction. No fish to peddle, no "moral" (many of the present-day stf writers seem to have developed an Aesop Complex), just a heck of a swell story. No sly satire, either. That's science fiction as it should be—writing, not preaching.

I will admit that the thought of those five dead men Jean left in her wake bothers me somewhat. Maybe the four at the saloon were no-goods, but couldn't Vance find a way to leave the Superintendent of the Waif's Home out of it? Or at least say he flogged the children daily? Also, if the man in the snapshot looked like the fellow in the deep freeze, why did he turn out to be Fothingay? Fothingay was Lionel, as you'll remember; it was Hugo whose carcass had been chilled.

There was a point in the story where the odd situation and queer characters made me think of "Alice In Wonderland." I'm sure, though, that any devotee of Lewis Carroll would be deeply shocked at my comparison of Jean Parlier with Alice. The two are—well—incompatible.

Finlay's illustration for the story was a beauty. But, gad, man, that Bergey cover! A throwback to the Dark Ages!—*1455 Townsend Ave., New York, 52, N. Y.*

Those five dead men bothered us a little at first too, but we're glad we resisted the impulse to sweeten Jean Parlier in any degree. She was a tough, ruthless little opportunist; the author had created her that way and built a story around her. Tampering with her would have created false notes in the story. We don't have to write down to a maple-fudge mentality, do we? Incidentally, you'll be glad to hear that a sequel to ABERCROMBIE STATION is in the works: CHOLWELL'S CHICKENS. And for more Jack Vance, keep an eye on SS, where BIG PLANET, a full-length novel, should arrive around September.

CURBED URGE

by Edward G. von Seibel

Dear Sam: Though I feel an almost overpowering urge to bury my axe of contention in your back I shall restrain myself because I have a favor to ask of you. A while ago, about a month, I joined the N3F, and as a consequence received a tremendous amount of mail, all of which I couldn't possibly reply to along with my regular correspondence. So to these people who gave me such a wonderful welcome I wish to convey my thanks through your magazine. And thanks to you too Sam, since I know you'll print this. You're a good guy even if we do have some hirsute rows now and then.—*P. O. Box 445, Olivehurst, Calif.*

That's five o'clock shadow, that hirsute row. You feel all right? Hardly recognized you under the dove of peace.

FANTASTICALLY YOURS

by Eileen Monk

Dear Editor: I was certainly pleased to see a sequel to MERAKIAN MIRACLE when I opened the February ish of T.W.S. Maybe I'm asking too much, but how about a sequel to THE REGAL RIGELIAN? Or is it possible?

Second only to this was ABERCROMBIE STATION, by Vance. I especially liked the ending, very down-to-earth after all that fantasy.

In my opinion (which generally isn't worth very much) ALIEN PSYCHOLOGIST and SURVIVAL tied for third place. But in regard to the latter, Oh, migosh, that last sentence! Maybe I took it the wrong way, or maybe I've got a weak stomach, but it didn't exactly appeal to me.

OUR INHABITED UNIVERSE improves with every issue, so here's to many more of the same articles.

Well, I see that Bergey did it again. When I bought the October ish, I thought that all the protests against the above had taken effect, but no, another scantily clad femme has made her debut. Ah well, Bergey will be Bergey, and there's very little the fans can do about it. Besides, the gal *was* covered, if only barely.

By the way, if this letter ever sees print, can I beg, buy, or borrow a copy of MR. ZYTZTZ GOES TO MARS (I hope I've spelled this correctly, though I rather doubt it) from any kind fan?—*Grindrod, B. C., Canada.*

Don't know about your stomach, but that last sentence in SURVIVAL meant just exactly what you thought it meant. Beautifully logical, wasn't it?

BRADBURYANA

by John Taylor Gatto

Dear Sam: And may I call you Sam? You sound like such a friendly guy.

Congratulations to you and your able predecessor, Sam I, he for beginning, you for continuing in the grand new tradition of Thrilling Publications. 27% of the stories in Groff Conklin's newest anthology are culled from the pages of your two magazines.

I must admit though, with all due respect to the stories, I enjoy the editorials, the book reviews, the letter sections and the FRYING PAN equally well.

Mr. Bixby's column was so uproariously funny that it seems impossible to believe. You had better tell him to watch his pen before he destroys the rest of my dream castles and causes me to become a figment of my own imagination. I know how that poor fan must have felt.

Isn't there any way you could give such masterpieces of art as the drawing on page 11 to eager

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fans instead of letting them mold in a crusty, musty and dusty cabinet? How about an illustration to each fan who takes out a three year sub? (If so, save me the Finlay on page 11.)

Could you tell me something about Ray Bradbury? Ever since my Revelation he has been No. 1 in all my surveys and I am sure this is not just one man's opinion. Still I know practically nothing about him as an individual. Is he a good conversationalist? Does he attend fan conventions? Is it possible to meet him? Perhaps you could run an article entitled "The Mind Of Raymond Bradbury?"—*42 Oakland Avenue, Uniontown, Pa.*

If you will send half a buck to William F. Nolan at 4458 - 56th. St., San Diego, Cal., he will send you a nifty 63-page photo-lith job entitled THE RAY BRADBURY REVIEW, which contains more stuff on Bradbury than we could ever get into one article. It has, in fact, articles on Bradbury by Anthony Boucher, Henry Kuttner and Chad Oliver, to mention only a few names you know. It gives you Bradbury's biography, tells you what he eats for breakfast, how he writes, examines the state of his liver and generally turns him inside out. It has an article by Bradbury himself (WHERE DO YOU GET YOUR IDEAS?) and a Bradbury story (TIME INTERVENING). It has illustrations, newspaper reviews and comment and a complete bibliography of Bradbury's work. It is, in short, exactly what you've been panting for. Don't rush out to California, write for it. Nolan will send it to you.

THE SHUT-IN CLUB
by Dr. D. E. Wood

Dear Editor: This letter is written in appreciation of the S.F. magazines sent by readers. We especially wish to thank Mr. Forry Ackerman for the books he sent. They were very welcome.

Human psychology is funny. We are still trying to answer letters from readers who wrote asking us if we could use S.F. magazines. I suppose each reader thought, "Well, I know they must have plenty by now. Anyway, I'll write and ask." So we received letters instead of magazines to a ratio of 100 to 1 and this fact presents a problem. We are answering these letters telling them we never get enough, as fast as possible. But our stamp supply is a problem. We even picked out 20 duplicates of our magazines and swapped them for three and one cent stamps to answer some of these. I hope this was o.k. with you readers who sent them. Our club receives no aid from any chest or agency. What stamps and supplies we get are donated by friends. So if our answer is late, you will know we are scraping the stamp box bottom or else scheming some way to get stamps to answer with. Meanwhile, remember please we never get too many magazines of S.F. When we finish them they go to the home for the incurables, crippled adults, etc.

We felt a little guilty swapping our duplicates for stamps so this letter is also written to salve our conscience for that dark deed. It was our only solution, but we hang our heads in remorse just the same.

Our members have been working a problem for months. What would the furniture look like, and how would people walk if our knees and elbows worked just opposite to what they do?—*1194 Coker Street, Memphis, Tenn.*

This letter carries its own commentary—you take it from there. As for Dr. Wood's problem of the knees and elbows working the other way, I asked a few of the experts around here and all I got was a lot of dark muttering. From Bixby it sounded like, "Glad to see you back from the front," or something similar.

IMPACT
by Charles Lee Riddle, PNCA, USN

Dear Sam: I know by this time you are getting pretty tired of letters that begin "Gee, how I miss Merwin—hope you are as good." Well, I won't start this letter that way, for I feel you are good at editing, or you wouldn't have been given the job in the first place. So, I'll leave off the typical greetings and get to the business at hand.

Which is the February 1952 issue of TWS. I received my sub copy just before I came aboard ship for passage back to the U.S. While the family were slightly indisposed with "mal der mer" last night, I sat up and read it completely, and on the whole, liked it very much. There were one or two not-exactly so-called stinkers in it, but the remainder made the asking price of the magazine worthwhile.

Perhaps the story with the greatest impact on my mind was SURVIVAL. I can't recall a story that impressed me so much. The ending was totally unexpected, and only after reaching that last line, did I realize the mood the story had built up in me. I predict that story will hit an anthology very soon. If it doesn't, I'll be mighty astonished! In fact, I've been doing nothing all day but telling about it to whomever would listen. (You might gain a few readers aboard that ship after my talking so much about it.)

The other story that I liked a great deal was Erik Fennel's ALIEN PSYCHOLOGIST. Not because I had read the story in rough when I first came out to Hawaii, but because it marked a return to the stf field of Fennel, who has been long absent. Keep after him to give you more stuff, Sam. Fennel is good at writing, but I'm afraid that the balmy air of Hawaii has made him put off writing too much.

One story that I definitely could not bring myself to like was ABERCROMBIE STATION. What this was doing in TWS, I cannot decide. Either you needed a novel to fill out the mag or else you were trying to clean out the back-log that Merwin left you. In either case, you should have forgotten the whole thing. Jack (I *know* he's not Kuttner) Vance should be blushing a great deal when he sees his brainchild in print!

The rest of the stories were fair to middlin-good. On the whole (with SURVIVAL out-weighing the rest by far) you had a darn good issue. Keep up the good work.

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On the personal side for a moment, if I may, I have been transferred from Sunny Hawaii to New York City for duty by the Navy. My fanzine, PEON, of necessity will be delayed in its February issue for a short while. Due to a mistake in not watching the packers out in Hawaii, I had the entire issue (which was all ready for the mimeographers), together with my mailing list and other various related material shipped by freight instead of bringing it with me. So, until it arrives in NYC (and I understand it will be March or thereabouts), I will be unable to put out another issue. I don't have a permanent NYC address as yet, but any mail sent to me at the below address will reach me okay.—*Box 463, Church St. Station, New York 8, N. Y.*

The enthusiasm for SURVIVAL we share, but the completely negative approach to ABERCROMBIE STATION baffles us. No, this was no back-log to be blamed on the absent head of Merwin. We agreed on that story before he left; in fact we bought a sequel to it as already related, which will appear shortly. Fair warning to you to take cover. But not only did we think ABERCROMBIE STATION was a pretty good story, it even has factual substantiation. Charles Drummond of San Antonio, Texas, has sent us a clipping which reads:

> Few men in Belgium aspire to join the country's most exclusive club, an organization with headquarters in the little town of Menin. No man who weighs less than 220 pounds can even file an application for membership. The president tips the scales at 320 pounds and calls the first vice-president a shrimp because he weighs a mere 287 pounds.

OOPSLA
by Gregg Calkins

Dear Sam: I have just finished the February issue of TWS and am sending you my comments on the mag (along with some of my own propaganda—I'm not without scruples). Hmmm. Bergey and his half-clothed babes (while the hero is fully space-suited) are there, but I seem to miss the sight of the BEM. I don't see how Bergey could have missed doing one with ABERCROMBIE STATION as a lead novel. Besides, I had thought Bergey was a reformed character as far as his covers went. More Schomburg, I guess, and another 30 days for Bergey.

The above-mentioned novel was very good, as Vance usually is. THE REGAL RIGELIAN turned out to be a very good sequel to THE MERAKIAN MIRACLE. Please tell Mr. Crossen that I won't complain one bit if he goes on to make quite a chain of "sequels" to these tales. The rest of the issue was readable but nothing special.

As for your departments — why don't you get Bixby on the ball and have him review some fanzines? His little story was interesting and even funny, but I can't see where it concerned fanzines. Now don't tell me "The Frying Pan" isn't supposed to do that. You know as well as I that the sub-title is "A Commentary on Fandom" and what plays a more important part in fandom than fanzines?

Speaking of fanzines — have you seen the new zine in the zeld? It's named OOPSLA and is pubbed regularly every two months, 10c, 24-30 pages and is doing pretty well so far. The first issue contained material by Covington, Rog Phillips, artwork by Lee Hoffman, Shelby Vick and others. Try a sample—for 10c, what can you lose? ((Incidentally—just in case you haven't guessed—I'm editor.))

It seems to me that the Wonder Story Annuals are getting smaller every year. What is the matter? "The Best in Science Fiction Anthologies" indeed. The smallest, maybe, but the best? Incidentally, THRILLING PUBLICATIONS now has the best of schedules—a monthly, a bi-monthly, a quarterly and an annual in the s-f field. All you need is one pubbed twice a year.

And so to bed. . . . I'll look for you next issue. A final plea: why not put the next publication date on the contents page? Answer that—if you can, Sam.—*930 Briarcliff Ave., Salt Lake City 16, Utah.*

Next publication date is going into SS, which is feasible now that it is a monthly. It's a little more complicated with a bi-monthly like TWS, so don't rush us. As to the reformation of Bergey—how about this cover, without a female draped or undraped in sight? Not only that, but much can be done with females on stf covers that bear little relationship to the brass harness Bergey period. You'll see them coming along soon.

HEART MURMURS
by Harry S. Clements

Dear Sir: This is the very first letter, etc., etc. Which brings me into the illustrious company of Mr. J. Wells, that dignified leading light of the scholastic world and a compatriot of mine.

Like Mr. Wells I find no reason to write to any SF mag unless it is in an advanced state of decay and ready to be buried—I like to be chief mourner. However in this case I feel somehow that the funeral is a bit premature. Mr. Wells in his impatience and urge for perfection has mistaken a tummy rumble for a heart murmur and signs the death certificate while the patient is still kicking.

I'm a person of fairly equable temperament and my blood pressure is very low, but his letter had an alarming effect on my temperature, raising it to a point where I was sure I must have influenza or malaria or something.

It was the sheer intellectual snobbishness of the letter that did it. Such a calm assumption that what he liked must be first class and that all else is trash. He wants, it seems, science fiction with accent on the science—good, so do I. He quotes a few names of those writers he regards as tops; they are my favorites too. But, with the possible exception of Olaf Stapledon, not one of those authors measures up to the exacting standards Mr. Wells has set down and even Stapledon wasn't averse to the use of pseudo-science or even sex to put over some point in philosophy.

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H. G. Wells was a good writer but hardly scientifically accurate. His idea of a space ship was impossible and his early designs for airplanes in THE SLEEPER AWAKES were unsound. Neither of those inaccuracies detracted from the value of the stories as entertainment.

The choice of Edgar Rice Burroughs among his big five was a dead give-away. Mr. Wells, Burroughs did not write science fiction. He wrote rattling good adventure yarns with unusual backgrounds—good old sword-swinging adventure with a handsome hero and a beautiful princess, even if she did lay eggs.

Mr. Wells wants to improve the reading public's mind, but his own tastes apparently do not run in that direction. People like to read about other people, not things. They like to think a scientist is human like themselves, subject to the same emotions, glandular disturbances and petty vices. They like to find at least one character in the story with whom they can identify themselves. Even you must—you must be at least part human or you wouldn't like Burroughs.

However, Mr. Wells had one good idea; the idea of analyzing SF ideas for plausibility. For example I saw a short article once sandwiched between stories, giving the basis for certain assumptions in the story. It dealt with that old standby, the heat ray. I was surprised at a good deal I'd taken for granted. The final conclusion as I remember it was that electronic heat guns were possible, but hardly of the hip-holster type. A battleship carrying one wouldn't have room for any other weapon.

I'll sign off with a word of praise for your mag. It's good and the December issue was extra good. It is not my favorite mag but it is well up with the first three and challenging the leader. Once I read TWS because I couldn't afford to be particular, now I read it from choice. Don't let anyone kid you, Mr. Mines, you've got a good mag and as long as you remember that SF means science FICTION it will remain good. Don't let the reformers get you down. But I should tell you—everyone knows that editors develop skins like battleship armor, to which the heaviest criticism is like the touch of a feather.—*211 Crownfield Rd., Stratford, London E 15, England.*

So it's our epidermis! And we've been blaming the laundry for the way the collars of our shirts have been wearing out. But about this battleship lugging around the colossal heat ray. You're overlooking something. A heat ray built *today* would have to be that big and bulky. But that doesn't prove anything about the heat ray of 500 years from now. Remember the first radio tubes? (Valves, if you will.) And think of the ones now in use, slimmed down to pin size. That's the catch in trying to prove plausibility. You're working from what we know today, whereas there's no telling what may be discovered tomorrow.

Science-fiction inventions, therefore, are no more than a logical *extension* of today's knowledge, but an extension, not merely today's knowledge.

Otherwise, it was good to hear from you. And you will no doubt be hearing from Mr. Wells.

PAGING THE SARGE

by Gerald A. Steward

Dear Sam Mines: I have just finished reading TWS Feb. '52 and I sit here before my typer preparing to write you a little note.

First I gaze upon the cover. 'Tis a Bergey. This I know because Schomberg can't draw wimmin like Bergey. This is proven when you tell me so in the letter department. I suppose it is supposed to illustrate ABERCROMBIE STATION. It does, tho not very accurately. Personally I like Schomberg's spaceship covers better.

Skipping the lineup page and your editorial which are good enuff not to need commenting, we come to ABERCROMBIE STATION.

A well-written story but I didn't like it. I'll give it A minus. (Just below readable.)

THE REGAL RIGELIAN—yak yak. This I enjoyed. It was better than THE MERAKIAN MIRACLE. How about another sequel? Could be called: Canopus Caper, or The Sirius Swindle, or better still, The Fomalhaut Fraud. What say Ed?? THE REGAL RIGELIAN earns a B plus. (Very Good.)

SURVIVAL—This was par with RR also B plus.

THE STAR MINSTREL—Fair. But I have neffer heard of anyone who could pick up a musical note so fast. This gets D plus (Fair, above average.)

SOLUTION VITAL—Liked the ending on this. Like Pratt's work. Ain't fussy over Kubilius. C plus (Good).

AND SOMEBODY TO MARS—Nuff sed. A minus.

ALIEN PSYCHOLOGIST—I liked the last sentence. "Little by little would evolve: *What?*" My guess is HOMO SUPERIOR. C plus (Good).

THE RINGS OF SOL—This series bears rereading. A plus (Excellent).

Summing up what I have rit it comes out like this: Six plus and two minus. That's a batting average of .750. That's good in my league.

Just in case you are interested, here is how I rate the top five mags and their average: STARTLING STORIES—.767; ASF—.725; OW—.707; THRILLING WONDER STORIES—.703; GSF—.646.

Onward into the Letter Dept. Thanks for publishing my letter. No results as yet, but the mags have only been on the stands a coupla days. What happened to the beginning of Mrs. Pratt's letter? Starts in the middle of a sentence. (It did. Some type must have fallen out after it was proofread—Ed.) In a comment to Mrs. Kamine you say that stf is pronounced "stiff." Like it better pronounced "steff."

Well, boy, Merwin may have laid a good foundation, but you added a major improvement when you started putting SS out on the monthly basis. Yes sir, a major improvement.

Ha, ha, ha, I yam laffing at the Frying Pan. Do you treat all fans that visit you that way? You beast. You could have at least gave the poor guy a color photo of the cover. You do use color photos to make the plates, don't you?

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Glad to see you are getting a St. Clair story. How about a Hamilton effort? Speaking of Hamilton, WHY did he kill Capt. Future?

Must be admitted at last. I am Snaggletooth. (Whoa, sob.)

On that I crawl back down the drain and put the plug in after me—*166 McRoberts Ave., Toronto, Ont., Canada.*

Quick, Frog-ears, the Drano.

Why did Hamilton kill Cap Future? 'Cause we handed him a gun. But cheer up. LORDS OF THE MORNING by Hamilton is scheduled for the August TWS. No, we don't make a color photo of the cover. The engraver makes color separations, but that's something else. So you rate SS as the top of the heap? Interesting. Seems to be a direct connection between the length of the story and your enthusiasm about it.

But whatever the reasons, thanks for your ratings. Makes us feel like a lonely little baseball in the midst of the American League.

BACK NUMBER DEPT.

by G. Visser

Dear Sir: I would very much like to know whether you could supply me with back copies of THRILLING WONDER STORIES and the price per copy per lot. It is very difficult to obtain them here in South Africa because of the import control. I am very much interested and wish to obtain some of the old copies.—*Postal Staff, Henneman, Orange Free State, South Africa.*

We print this letter as our usual public service—we stock no back numbers ourselves, nor sell them, but any fans who want to unload a cherished collection which is threatening their living space may write to Mr. Visser with our blessing.

And speaking of shrinking space, we're about done. An announcement of a southwestern stf convention, sponsored by the San Diego Science-Fantasy Society, needs compression to get in. It will be June 28th and 29th at the U. S. Grant Hotel in San Diego, and the presence is promised of Ray Bradbury, Henry Kuttner, Anthony Boucher, Kris Neville, Robert Heinlein, Fred Brown, Cleve Cartmill, C. L. Moore, A. E. van Vogt and many others. For reservations send a buck to The Sou-Westercon Committee, 3522 Union St., San Diego, 1, Cal.

My apologies to Jim Leake—a good letter was squeezed out because it was th-a-t long—to Stan Skirvin, Pat Lewis, Dick Clarkson, Wanda Reid, Ted Lenoire and a few thousand others. See you in August.

—THE EDITOR

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The FRYING PAN

A Commentary on Fandom

JIMMY TAURASI dropped by the other day in pursuit of news for FANTASY-TIMES, and during the session suggested that we devote one of our fanzine columns to *fan-clubs* . . . dope on which club is where, doing what and so forth. This we will not attempt; but we are quite willing to give fanclubs a friendly mention. So if your group is looking for members, fanzine material, etc., drop us a line.

* * * * *

Received a letter informing that we are a slob, an ingrate and a weregoat because we are hostile to fans. The writer based his opinion on our recounting, two months ago, of the visit of "the Fan" to Standard Pubs. We deny that we are hostile to fans; the rest of the indictment would require discussion.

* * * * *

Saw Mel Korshak, of Shasta Publishers, recently, and he spoke enthusiastically of the coming Tenth Annual Science Fiction Convention, to be held in Chicago this September. Mel is a Convention official—we never did find out exactly what—but at any rate he speaks with authority on the matter. By the time he had finished, we were enthusiastic, too; it sounds like every fan's dream of Heavention . . . better plan to go.

* * * * *

Once we were impersonated, and it's a peculiar sensation, and it happened thus: a certain individual, who shall here be nameless, wrote

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letters to out-of-town fans and fanzines explaining how, in his spare time, he performed our editorial duties under the pseudonym of Jerome Bixby. When we first heard of it we were amused at such mouse-witted gall, but let it ride —until we got wind of the hair-raising twaddle the bogus Bixby was spreading around under our fair name. Then we sent word through proper fan-channels that if he persisted we personally would take him out and whittle him with a fire-ax until he was underweight. Which was the last we heard of that incident; but now . . . once again we find our existence in fact doubted. Letters have come into this office addressed to: Dear Mr. Bixby (yoo, hoo, Mines, come out from behind that silly psoodeenim); Dear Bixby. (Why the phony name, Mines?); and Dear Mr. Mines (who is too cowardly to sign the fanzine reviews with his own name). Now, we have a firm, if possibly inadvisable, desire to have our efforts ascribed to *us*; we would like to have people believe that *we* exist.

After all, we used to read *Unknown;* we are aware of what happens to people whose existence is doubted to a sufficient degree: they just *vanish.* So . . . for the doubters, we are truly us—and the fact can be readily demonstrated by placing Mines and ourself in a room containing a poker game: Mines will get bored, and soon leave; unless he has been trampled into the floor by our wild rush to buy in.

* * * * *

Recently we undertook to compare the fanmag activities of a number of fans with the bitter complaints anent stories and artwork voiced by those fans in pro letter-sections, revealing that a goodly amount of such yowls are flung from glass houses.

* * * * *

We hear that a fanzine is being contemplated that will discuss the gamut of stf gadgets and gimmicks, with an eye to determining which, if any, might be developed by present-day techniques . . . should be interesting.

* * * * *

Last week we entered the Fifth Avenue Station of the IRT subway in the very best of moods. We found a seat, fell to snorting and scowling over the latest issue of a competitor, and were presently aware of being nudged on

[*Turn page*]

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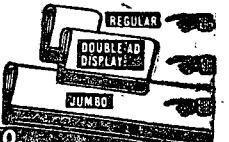

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the elbow. He was a seedy-looking guy with a rat-trap mouth and a bundle of dirty newspapers under one arm.

"You read that stuff?" he growled, jerking a thumb at the magazine we held. "Men onna moon an' all that?"

"Well—" we began.

"Nuts!" he said. "I read one of them stories once . . . all abouta guy went up to the moon inna rocketship. For the birds, but strictly for the birds! How'd he know he WOULDN'T RUN INTO A STAR?"

"Mmmm—" we said. "Well, there's radar—"

"Nuts!" he said. "The sky's fulla them. Take a good look at the sky some night, an' get wise. You miss one star, you BOUNCE YOUR BEAN OFF ANOTHER ONE!" And he moved away a few seats, and there he stayed until we got off at our stop, occasionally muttering to newcomers with a jerk of his head in our direction, "Men onna moon . . . NUTS!"

We left our magazine on the seat when we left, for the hell of it; someone else picked it up.

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Science Fiction BOOK REVIEW

WHO GOES THERE? by John W. Campbell Jr., Shasta Publishers, Chicago, Ill., 230 pp., $3.00.

With the controversy still raging over THE THING, it seems like a bit of an anti-climax to pop up with an opinion on the story which started it all. Nevertheless, it is our duty to record that this is a pretty good story—good in the sense of "effective." Campbell's talents as a writer are not excessive, but he knows his stuff and, somewhat like Heinlein, he has the ability to stack up convincing detail in such numbers that the reader is forced to surrender, no matter how skeptical he may have been at the start. The plot you know—a "thing" is discovered frozen in the ice of Antarctica and thawed out, with horrible results. It comes to life and begins absorbing each member of the expedition, the absorbed man becoming a monster and the original monster remaining free to extend its conquests.

This plot has enough holes in it to drive a truck through, but the primary test of a story is how effective it is, and when it is effective it is superfluous to quarrel over technical matters which automatically become unimportant.

It is interesting that Campbell used the same gimmick in another story, THE BRAIN STEALERS OF MARS, written in 1936. The volume contains other stories: BLINDNESS, FRICTIONAL LOSSES, DEAD KNOWLEDGE, ELIMINATION, TWILIGHT and NIGHT. These stories cover a period from 1934 to 1938 when Campbell was writing. Done by a man who knows science fiction as few others, they are absorbing and worth while.

TRAVELERS OF SPACE, edited by Martin Greenberg, Gnome Press, New York, 400 pages, $3.95.

With anthologies popping like corn in a movie theatre lobby, some distinguishing feature has become a necessity to give newcomers significance. Thus was born the "theme" note of anthologies, a trend which this new imposing volume follows, being subtitled "An Anthology About Life On Other Worlds."

It is a book we suspect may rapidly become a collector's piece, for in spite of its relatively

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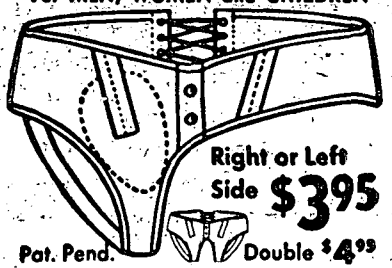

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high price it contains some unique features. One is an introduction by Willy Ley, another is a science fiction dictionary by Samuel A. Peeples, David A. Kyle and Martin Greenberg and third is an interstellar zoo of Bems to end all Bems by Edd Cartier. Some of these Bems bear strange resemblances to earthly mosquitoes, caterpillars, snails, etc., but the conglomeration of tentacles, eyestalks, pouches and appendages in odd color combinations is guaranteed to impress and delight the amateur collector of Bems. This insert, sixteen full color plates, is noteworthy, it obviously added heavily to the cost of manufacture and lends a certain official quasi-authority to this poker-faced encyclopedia of the new mythology. Add to that the fact that this book is 400 pages long and it certainly begins to look like quite a bit more for the money than is usual.

A word about the stories. With the subtitle "life on other worlds," it is not hard to guess that the theme is bems, humanoids, aliens and what have you, all over the galaxy. Included, for example, is Hal Clements' ATTITUDE, the story of a rather good humored tussle with the starfish men of another world who took humans and others prisoner, but only to study them, without malice and with perfectly good sportsmanship when their captives acted up, or escaped.

There is also Fred Brown's PLACET IS A CRAZY PLACE, in which Fred gets closer to creating a genuine sense of alienness than in almost any other story I have read. And from our own magazines there is Ray Bradbury's THE SHAPE OF THINGS, the story of a normal woman who gave birth to a small blue pyramid which cried in another dimension. Unless memory fails us, the ending of this story has been tampered with, in the interests of clarity as opposed to Bradburyan subtlety. If you remember the original ending you can make up your own mind as to which one you like better.

Other stories include THE ROCKETEERS HAVE SHAGGY EARS by Keith Bennett, a conventional tale of shipwreck and the long, forced march back to civilization's outpost by a hardy crew. This is a jungle story, whatever planet you call it. There is Heinlein's COLUMBUS WAS A DOPE, also from our mags, and here published under the name of Lyle Monroe, for reason we cannot fathom, THE IONIAN CYCLE by William Tenn, THE BULL by A. E. van Vogt, THE DOUBLE-DYED VILLAINS by Poul Anderson and more.

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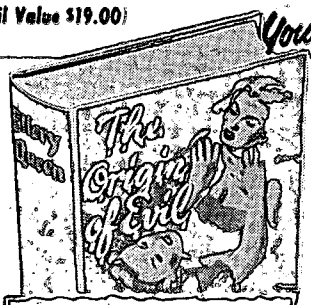

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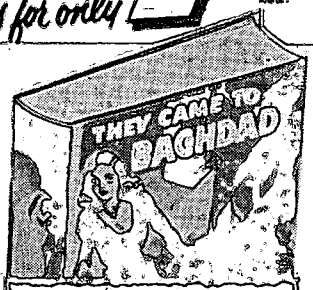

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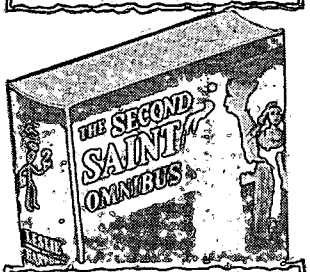

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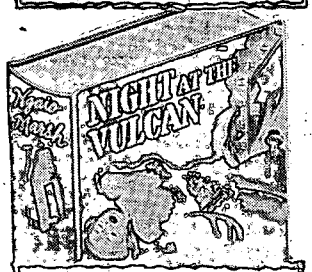

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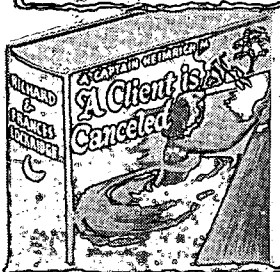

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